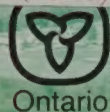


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Ministry of
Transportation

Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

**ONE STAGE SUBMISSION
ENVIRONMENTAL ASSESSMENT CATEGORY: Aa**

HIGHWAY 403 TO THE CALEDONIA BY PASS: 15 km
W.P. 36-84-00 DISTRICT 4 BURLINGTON

**Town of Ancaster, Township of Glanbrook,
Regional Municipality of Hamilton-Wentworth**

**Town of Haldimand,
Regional Municipality of Haldimand-Norfolk**

DECEMBER 1987

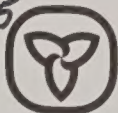
**PART I - ENVIRONMENTAL ASSESSMENT REPORT
PART II - PRELIMINARY DESIGN REPORT**

URBAN MUNICIPAL
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GOVERNMENT DOCUMENTS

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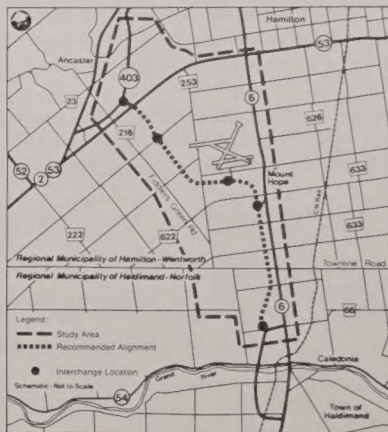
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Urban
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PART I - ENVIRONMENTAL ASSESSMENT REPORT

PART II - PRELIMINARY DESIGN REPORT

Prepared By:

M. M. Dillon Limited - Consulting Engineers - Planners - Environmental Scientists

URBAN MUNICIPAL

APR 26 1988

GOVERNMENT DOCUMENTS

NOTE

This Environmental Assessment Report consists of two parts. Part I contains the Environmental Assessment for the proposed undertaking. Part I also provides a Summary of the Environmental Assessment (as required by Reg. 205) and outlines the detailed analysis carried out for the Assessment. This analysis was conducted up to a preliminary design level of detail. Appendices to Part I contain detailed background and support documentation.

Part II contains the Preliminary Design Report for the undertaking. This report contains the relevant design and construction-oriented findings of the investigations which will be required to proceed to Detail Design, following acceptance and approval of the undertaking under the Environmental Assessment Act.

Appendix A, Part II, "Plans and Profiles", contains large scale plans and profiles for ultimate and initial stages. Additional appendices contain further detailed information.

Information is cross-referenced between Parts I and II of this submission.

The following Table of Contents summarizes the outline of each part of this report. A detailed Table of Contents is presented at the beginning of each Part.

TABLE OF CONTENTS

PART I: ENVIRONMENTAL ASSESSMENT REPORT

1. SUMMARY
2. INTRODUCTION
3. STUDY ORGANIZATION AND THE ENVIRONMENTAL ASSESSMENT PROCESS
4. EXISTING AND FUTURE CONDITIONS
5. IDENTIFICATION AND EVALUATION OF ALTERNATIVES
6. DESCRIPTION OF THE RECOMMENDED ALIGNMENT, IDENTIFIED ENVIRONMENTAL EFFECTS, MITIGATION AND COMMITMENTS TO FUTURE WORK

APPENDICES

PART II: PRELIMINARY DESIGN REPORT

1. INTRODUCTION
2. TRAFFIC
3. PRELIMINARY DESIGN ALTERNATIVES
4. THE RECOMMENDED PLAN
5. DESIGN CRITERIA
6. DRAINAGE
7. PRELIMINARY SOILS INVESTIGATIONS
8. ALIGNMENT CALCULATIONS
9. COST ESTIMATES
10. INITIATE FOR DETAILED DESIGN

APPENDICES

PART I

ENVIRONMENTAL ASSESSMENT REPORT



PART I
ENVIRONMENTAL ASSESSMENT REPORT

TABLE OF CONTENTS

| | PAGE | | PAGE |
|---|------|--|------|
| 1. SUMMARY | 1-1 | 5. IDENTIFICATION AND EVALUATION OF ALTERNATIVES | 5-1 |
| 1.1 Purpose of the Undertaking | 1-1 | 5.1 Introduction | 5-1 |
| 1.2 Description of the Undertaking | 1-1 | 5.2 Design Criteria | 5-1 |
| 1.3 Justification for the Undertaking | 1-2 | 5.3 Alternatives to the Undertaking | 5-1 |
| 1.4 Advantages and Disadvantages of the Undertaking | 1-2 | 5.4 Corridor Alternatives | 5-3 |
| 1.5 Alternatives to the Undertaking | 1-4 | 5.5 Initial Alternative Alignments | 5-7 |
| 1.6 Corridor Alternatives | 1-4 | 5.6 Alternative Alignments Rejected After A Preliminary Analysis | 5-9 |
| 1.7 Alternative Alignments | 1-5 | 5.7 Alternative Alignments | 5-9 |
| 1.8 Study Area | 1-5 | 5.8 Detailed Assessment of Alternative Alignments | 5-9 |
| 1.9 Potential Effects and Mitigating Measures | 1-5 | 5.9 Comparative Evaluation of Alternative Alignments | 5-12 |
| 1.10 Public Participation | 1-5 | 5.10 Modifications to the Recommended Alignment | 5-21 |
| 1.11 External Contacts | 1-7 | 5.11 Summary | 5-30 |
| 1.12 Sub-studies Carried Out in Relation to this Project | 1-7 | | |
| 2. INTRODUCTION | 2-1 | 6. DESCRIPTION OF THE RECOMMENDED ALIGNMENT, IDENTIFIED ENVIRONMENTAL EFFECTS, MITIGATION AND COMMITMENTS TO FUTURE WORK | 6-1 |
| 2.1 The Environmental Assessment Report - One-Stage Submission | 2-1 | 6.1 General | 6-1 |
| 2.2 Justification for the Undertaking | 2-2 | 6.2 General Description of the Project | 6-4 |
| 2.3 Transportation Issues | 2-6 | 6.3 Environmentally Significant Areas and Issues | 6-8 |
| 2.4 Background | 2-8 | 6.4 Commitment to Future Work | 6-23 |
| 3. STUDY ORGANIZATION AND THE ENVIRONMENTAL ASSESSMENT PROCESS | 3-1 | | |
| 3.1 Study Organization | 3-1 | | |
| 3.2 Pre-Submission Consultation | 3-3 | | |
| 3.3 Process for Determining Environmentally Significant Areas/Issues | 3-7 | | |
| 3.4 Commitment to Further Work | 3-8 | | |
| 4. EXISTING AND FUTURE CONDITIONS | 4-1 | | |
| 4.1 Introduction | 4-1 | | |
| 4.2 Natural Environment | 4-2 | | |
| 4.3 Socio-Economic and Cultural Environment | 4-8 | | |
| 4.4 Summary of Environmentally Significant Areas/Issues | 4-31 | | |
| 4.5 Transportation Facilities | 4-32 | | |

LIST OF TABLES

| | PAGE |
|-----------|--|
| TABLE 1.1 | GENERAL SUMMARY OF ENVIRONMENTALLY SIGNIFICANT AREAS/ISSUES 1-6 |
| TABLE 2.1 | YEAR 2001 TRAFFIC PROJECTIONS 2-8 |
| TABLE 2.2 | EXISTING HIGHWAY 6 LEVEL OF SERVICE YEAR 2001, DO NOTHING TRAFFIC FORECASTS 2-8 |
| TABLE 4.1 | SENSITIVITY OF EXISTING LAND ISSUES 4-15 |
| TABLE 4.2 | SENSITIVITY OF FUTURE LAND USES 4-21 |
| TABLE 4.3 | SUMMARY OF EXISTING AND FUTURE UTILITY PLANT . . . 4-30 |
| TABLE 4.4 | SUMMARY OF PROVINCIAL ROAD APPRAISAL SHEETS FOR EXISTING HIGHWAY 6 4-32 |
| TABLE 4.5 | EXISTING HIGHWAY 6 ACCIDENT SUMMARY 4-33 |
| TABLE 4.6 | SUMMARY OF EXISTING ROADS WITHIN STUDY AREA . . . 4-34 |
| TABLE 5.1 | COMPARISON OF TRANSPORTATION OBJECTIVES TO ALTERNATIVES TO THE UNDERTAKING 5-4 |
| TABLE 5.2 | CORRIDOR TRAFFIC PROJECTIONS 5-6 |
| TABLE 5.3 | FACTORS USED FOR THE DETAILED ASSESSMENT OF ALTERNATIVE ALIGNMENTS 5-10 |
| TABLE 5.4 | GENERAL ENVIRONMENTAL EFFECTS AND STANDARD MITIGATING MEASURES 5-13 |
| TABLE 5.5 | COMPARISON BETWEEN ALTERNATIVES A1, A2 AND A3 AT BOOK ROAD 5-18 |
| TABLE 5.6 | DETAILED ASSESSMENT OF ALTERNATIVE ALIGNMENTS A, B AND C 5-19 |
| TABLE 5.7 | DETAILED ASSESSMENT OF ALTERNATIVE ALIGNMENTS 1, 2, 3 AND 4 5-20 |
| TABLE 5.8 | DETAILED ASSESSMENT OF ALTERNATIVE A1 AND ALTERNATIVE A1A 5-22 |
| TABLE 5.9 | COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA CHIPPEWA ROAD TO GLANCASTER ROAD 5-28 |
| TABLE 6.1 | DETAILED ASSESSMENT OF RECOMMENDED ALIGNMENT . . 6-2 |
| TABLE 6.2 | SUMMARY OF RECOMMENDED ALIGNMENT 6-9 |
| TABLE 6.3 | SUMMARY OF NOISE MITIGATION CONSIDERATIONS . . . 6-19 |
| TABLE 6.4 | SUMMARY OF COMMITMENTS TO FUTURE WORK 6-24 |

LIST OF EXHIBITS

| | PAGE |
|-------------|--|
| EXHIBIT 1.1 | RECOMMENDED ROUTE 1-3 |
| EXHIBIT 2.1 | HIGHWAY 6 CORRIDORS 2-2 |
| EXHIBIT 3.1 | STUDY TEAM 3-2 |
| EXHIBIT 3.2 | STUDY AREA 3-3 |
| EXHIBIT 3.3 | MAJOR STUDY STAGES AND SCHEDULE 3-4 |
| EXHIBIT 3.4 | VARIOUS TEAMS INVOLVED IN THE STUDY 3-5 |
| EXHIBIT 4.1 | EXISTING CONDITIONS 4-10 |
| EXHIBIT 4.2 | OFFICIAL PLAN DESIGNATIONS 4-18 |
| EXHIBIT 4.3 | UTILITIES, NOISE AND HERITAGE RESOURCES 4-25 |
| EXHIBIT 5.1 | COMPARISON OF CORRIDORS TO STUDY OBJECTIVES . . . 5-5 |
| EXHIBIT 5.2 | ALTERNATIVE ALIGNMENTS 5-8 |
| EXHIBIT 5.3 | BOOK ROAD CROSSINGS 5-15 |
| EXHIBIT 5.4 | WHITE CHURCH ROAD AREA 5-24 |

LIST OF APPENDICES

| | |
|------------|--|
| APPENDIX A | RELEVANT CORRESPONDENCE/MINUTES OF MEETINGS |
| APPENDIX B | SUMMARY OF COMMENTS BY EXTERNAL AGENCIES AND MUNICIPALITIES |
| APPENDIX C | FIRST SERIES OF PUBLIC INFORMATION CENTRES |
| APPENDIX D | SECOND SERIES OF PUBLIC INFORMATION CENTRES |
| APPENDIX E | PROPERTY OWNERS MEETING (WHITE CHURCH ROAD) |
| APPENDIX F | THIRD SERIES OF PUBLIC INFORMATION CENTRES |
| APPENDIX G | EFFECTS TO FARM OPERATIONS |
| APPENDIX H | NOISE REPORTS |
| APPENDIX I | NATURAL ENVIRONMENT DATA |
| APPENDIX J | PRE-SUBMISSION COMMENTS |
| APPENDIX K | COMPLIANCE MONITORING |

1. Summary

1.1 Purpose of the Undertaking

The proponent is the Ministry of Transportation and Communications. The purpose of the undertaking is to ultimately provide a new fully grade separated freeway facility to:

1. Improve access to the recently expanded Hamilton Civic Airport.
2. Encourage industrial and residential growth in Townsend/Nanticoke and Hamilton-Wentworth Region.
3. Alleviate operational deficiencies on existing Highway 6.

To fulfill the purpose of the undertaking, Highway 6 (New) has the following objectives:

1. Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
2. Increase use of the Caledonia Bypass.
3. Improve access to and provide flexibility for development in Townsend/Nanticoke.
4. Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
5. Select a route which can be stage constructed in a realistic and economical manner.

1.2 Description of the Undertaking

The undertaking is a new, ultimate six-lane, fully grade separated, divided, rural freeway with a 120 km/h design speed (RFD 120). A description of the recommended plan for Highway 6 (New) is included in Chapter 6; detailed plans and profiles of the recommended design along with the Preliminary Design component of the study are found in Part II.

The following briefly describes the recommended alignment and profile for Highway 6 (New) from Highway 403 in Ancaster to the north end of the Caledonia Bypass at Greens Road (refer to Exhibit 1.1).

Starting at Greens Road (the north end of the existing Caledonia Bypass), a full interchange would be provided for access to Caledonia.

The alignment proceeds northerly towards Unity Road, a designated rural hamlet and an area determined to be environmentally significant for the purposes of this study. The crossing at Unity Road is in an area of deep cut, approximately 7 to 9 m, and thus mitigates visual and noise effects.

From Unity Road the alignment follows existing lot lines wherever possible. Overpasses are provided at Townline, Leeming and Chippewa Roads.

Between Chippewa and White Church Roads there is an overpass at White Church Road and an interchange with a connection to existing Highway 6. In addition to local access, the interchange serves a major traffic movement from Highway 6 (New) onto Highway 6 Existing and into Hamilton. The location and function of this interchange was judged to be environmentally significant for the purpose of this Study.

An interchange is provided opposite the existing access to the parking area of the Hamilton Civic Airport. This interchange is intended, in the short term, to serve all of the facilities associated with the Hamilton Civic Airport; and in the long term, will serve traffic to the Airport's air cargo and general aviation facilities.

The alignment proceeds to the west where it crosses Glancaster and Butter Roads. Overpasses will be provided at both these roadways.

The alignment proceeds northerly toward Book Road. At Book Road, an interchange is provided for local access and to serve airport-related industries and the long-term requirements of Transport Canada for a terminal on the north side of the Airport. The Book Road area was judged to be environmentally significant for the purposes of this Study.

The alignment proceeds northerly from Book Road to join the existing designated lands. This designation was laid down by the MTC in 1975 to protect land for a future interchange between Highway 403 and Highway 6 (New).

The interchange provided at Highway 403 serves all movements between Highway 403 and Highway 6 (New). In addition, ramps are provided to and from Highway 53 serving movements to and from the east on Highway 403.

It is proposed that Highway 6 (New) be staged constructed as follows:

- Stage 1 - two-lane undivided arterial highway;
- Stage 2 - four-lane divided rural freeway;
- Stage 3 - six-lane divided rural freeway.

Proposed staging is discussed in detail in Chapter 6.

1.3 Justification for the Undertaking

The identified need for a new transportation corridor between Hamilton and Nanticoke relates to municipal, provincial and federal desires to create an environment which will encourage planned development in the area. The new route is also needed to alleviate deficiencies in the access between the provincial freeway network and the existing and planned developments in the Hamilton/Nanticoke corridor.

Specifically, the need for Highway 6 (New) is based upon:

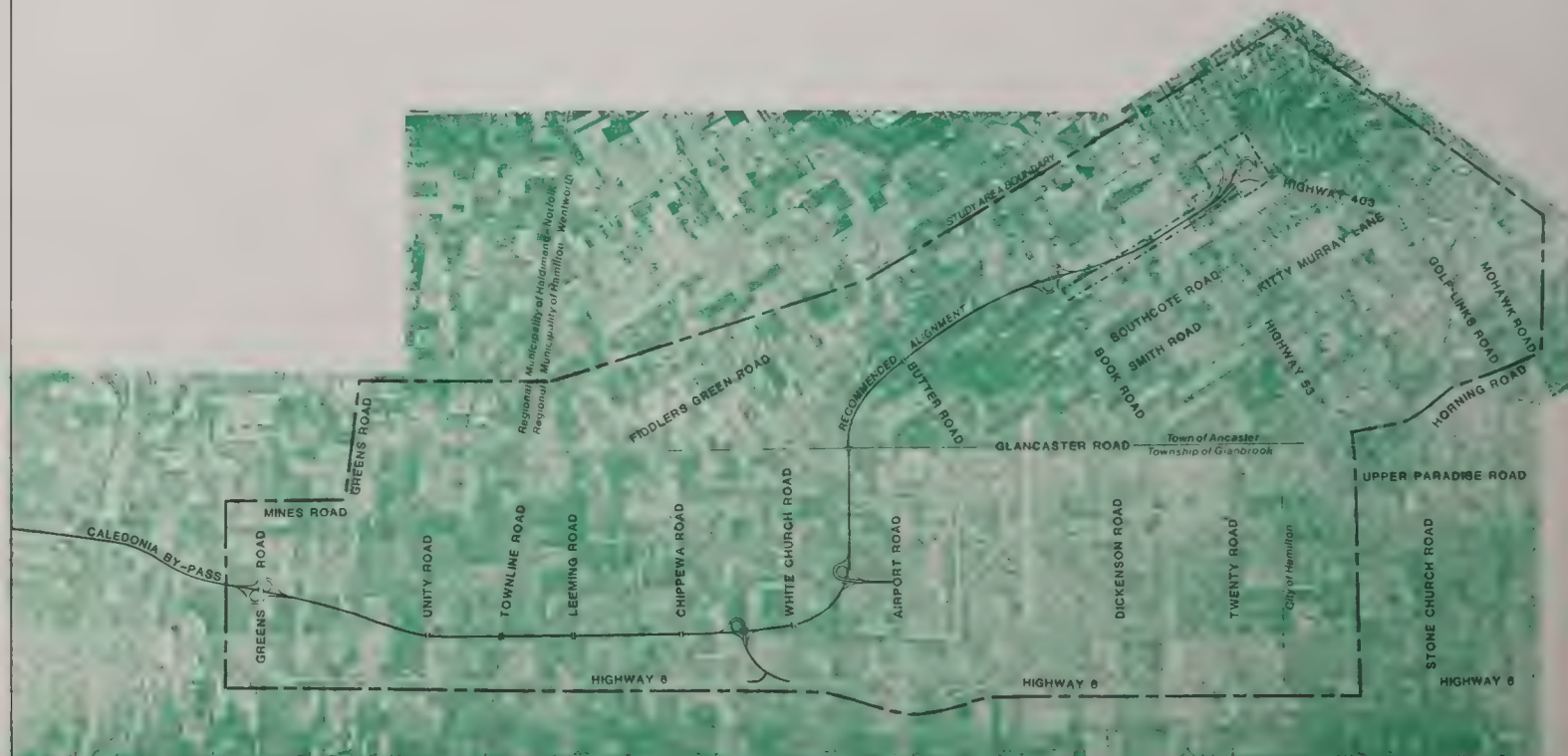
1. Improving access to the recently expanded Hamilton Civic Airport.
2. Encouraging industrial and residential growth in Nanticoke/Townsend and Hamilton-Wentworth.
3. Alleviating operational deficiencies on existing Highway 6.

The need and justification for the undertaking is detailed in Chapter 2.

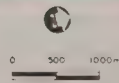
1.4 Advantages and Disadvantages of the Undertaking

The advantages are:

- direct access from the airport to the Provincial freeway system;
- increased use of the Caledonia Bypass;
- improved access to Townsend/Nanticoke;



Highway 6 (New) **HAMILTON TO CALEDONIA** Environmental Assessment & Preliminary Design Report



- Study Area Boundary
- Highway 6 New Designated Section

Exhibit 11

Recommended Route

- improved access to the industrial area of lower Hamilton;
- flexibility for staged construction to provide traffic service in accordance with available funding;
- the reduction of through and truck traffic from congested urban areas;
- encourages Provincial and Municipal objectives for economic growth;
- addresses needs and concerns of the trucking industry
- improved operational safety on the Provincial highway system.

The disadvantages are:

- removal of 166 ha of agricultural land including 34 ha of woodlot and 11 ha of waterfowl nesting area;
- removal of four residences;
- the creation of proximity impacts (noise, visual intrusion) in a largely rural area;
- reduction in traffic on existing Highway 6 may affect existing businesses.

These advantages and disadvantages are elaborated throughout the document.

1.5 Alternatives to the Undertaking

Alternatives to the undertaking consist of:

- modal (transit, rail, air);
- upgrading of existing facilities;
- "do nothing".

These alternatives to the undertaking were compared to the transportation objectives outlined above.

The transit, rail and air alternatives do not provide for improved auto and truck access to the airport, Townsend/Nanticoke or the industrial

area of lower Hamilton, and they do not increase use of the Caledonia Bypass.

Either upgrading of existing facilities or "do nothing" will not improve access to the airport, Haldimand-Norfolk or the industrial area of lower Hamilton. They do not increase use of the Caledonia Bypass. These alternatives do not provide for a new connection to Highway 403 and thus do not improve accessibility beyond that currently provided by the existing road system.

A more detailed comparison of the alternatives to the undertaking is presented in Chapter 5.

1.6 Corridor Alternatives

(Alternative Methods of Carrying Out the Undertaking)

During earlier studies for Highway 6 (New) between Caledonia and Hamilton (including the 1976 Highway 6 Nanticoke to Hamilton Joint Use Corridor Study), three basic corridors were identified for potential alignments between Caledonia and Hamilton. These corridors were:

1. The "West Corridor", located west of existing Highway 6 connecting to existing Highway 403 in Ancaster.
2. The "Central Corridor" generally located immediately east of existing Highway 6 and connecting to the proposed East-West Arterial in Hamilton-Wentworth.
3. The "East Corridor" generally east of the CNR tracks connecting to the proposed North-South Parkway in Hamilton-Wentworth.

In order to identify the Study Area for the Caledonia to Hamilton Study, it was decided to analyze the above three corridors in terms of their ability to meet the transportation objectives.

It was decided that if any of the three basic corridors did not meet the required objectives of the new facility, then they would be considered to be unacceptable alternatives and would be abandoned without any further study.

Based on this analysis (presented in Chapter 5), it was concluded that the East and Central Corridors do not adequately meet the required transportation objectives and, consequently, the Central and East

Corridors were not studied further. The Study Area is thus defined around the West Corridor.

1.7 Alternative Alignments

(Alternative Methods of Carrying Out the Undertaking
- Route Location and Alignment Alternatives)

Between Highway 53 and Glancaster Road there are three basic alternative alignments. Between Glancaster Road and the Caledonia Bypass at Greens Road there are four basic alternative alignments. In addition, there are also two abandoned alternatives at the west end of the Study boundary.

These alignments were generated on the basis of technical feasibility and the avoidance of known major impacts and constraints.

Chapter 5 of this report deals with the detailed comparative evaluation of the corridor alternatives and the alignment alternatives.

1.8 Study Area

Exhibit 1.1 illustrates the study area. The alternative alignments subject to detailed analysis and comparison are contained within this area, and are shown on Exhibit 5.2. The determination of the study area is presented in Chapter 5.

1.9 Potential Effects and Mitigating Measures

Detailed information on potential effects and related mitigating measures for the recommended design are included in Chapter 6 of this Environmental Assessment. The more important potential effects identified during the course of this study are discussed in Section 6.3, "Environmentally Significant Areas and Issues". Table 1.1 summarizes information related to these issues.

Section 6.4 of this Report describes commitments made to future work as a result of this Environmental Assessment.

Part II of this report presents tables outlining typical mitigation measures considered for construction effects.

1.10 Public Participation

Details of the project's public participation program are included in Chapter 3 and the relevant appendices. In summary, the formal public participation program proceeded as follows:

Start of Project

April 1985 - Newspaper announcement and brochure mailing informing the public of the start of the project

Preliminary Assessment of Feasible Alternatives

May 1985 - Newspaper announcement and Public Information Centre brochure distribution

June 1985 - First Series of Public Information Centres held in Ancaster and Mount Hope

Detailed Evaluation of Feasible Alternatives and Presentation of a Technically Recommended Alignment

October 1985 - Newspaper announcement and Public Information Centre brochure distribution

October 1985 - Second Series of Public Information Centres held in the Unity Road Hamlet and Ancaster

Special Property Owners Meeting - White Church Road Area

February 1986 - Direct mailing to affected Property Owners informing them of the special meeting

February 1986 - Property Owners Meeting, White Church Road Area

Presentation of Recommended Alignment in Preliminary Design Level of Detail

March 1986 - Newspaper announcement and Public Information Centre brochure distribution

April 1986 - Third Series of Public Information Centres held in Ancaster and the Unity Road Hamlet.

TABLE 1.1
GENERAL SUMMARY OF ENVIRONMENTALLY SIGNIFICANT AREAS/ISSUES

| <u>Issue/Concern</u> | <u>Report Section</u> | <u>Future Work Proposed</u> | <u>Agencies/Groups Involved In Future Work</u> | <u>Comments</u> |
|----------------------|-----------------------|---|--|--|
| Noise | 6.3.1 | Detailed barrier calculations during final design. | Property Owners/ MOE | Mitigation to be investigated and provided based upon MTC/MOE noise protocol. |
| Agriculture | 6.3.2 | Access to be provided to new farm units created Landlocked parcels to be offered for sale to adjacent owners | Property Owners | Standard MTC practice. |
| Unity Road | 6.3.3 | Investigate advanced tree planting | Haldimand/ Norfolk Board of Education | To reduce visual impacts associated with the crossing, advanced tree planting will be investigated at the time of detail design. |
| White Church Road | 6.3.4 | None required. | N/A | Mitigation incorporated in design. |
| Book Road | 6.3.5 | Provide access to historic abandoned human cemetery (Parkin) | Town of Ancaster | Town requires access to the cemetery in order to undertake maintenance. |
| Property | 6.3.6 | Obtain residences prior to construction | Property Owners | Residences preferably obtained on a willing seller, willing buyer basis at fair market value. |
| Vegetation | 6.3.7 | Walk R-O-W to identify significant species | MNR | To be undertaken during detail design. |

1.11 External Contacts

Formal Municipal Council presentations were made during May 1985, October 1985, February 1986 (Glanbrook Council only), and April 1986. Numerous working meetings and correspondence were conducted with municipal staff members from all affected municipalities.

An External Team was formed of all government agencies and ministries which have formal review of the Environmental Assessment Report. Formal External Agency presentations were made in June 1985, October 1985 and April 1986. In addition, several working meetings were made with individual ministries and agencies for a specific project-related concern. These were:

- Ministry of Agriculture and Food;
- Ministry of the Environment;
- Ministry of Citizenship and Culture;
- Ministry of Natural Resources;
- Grand River Conservation Authority;
- Niagara Peninsula Conservation Authority;
- Transport Canada;
- Ontario Hydro.

Contact was made with the following utility companies to determine location of existing plants, planned improvements or expansion, and relocation or plant modification requirements:

- Ontario Hydro;
- Union Gas;
- Bell Canada;
- TransCanada Pipelines;
- Interprovincial Pipelines;
- Trans Northern Pipelines.

Additional information on external contacts is presented in Chapters 3 and 4.

1.12 Sub-studies Carried Out in Relation to this Project

As part of this route location and preliminary design study, the following interim reports were prepared:

- Interim Report: Study Area Determination and Traffic Analysis, M.M. Dillon Limited;

- Results of the First Series of Public Information Centres, M.M. Dillon Limited, June 1985;
- Results of the Second Series of Public Information Centres, M.M. Dillon Limited, October 1985;
- Results of the Property Owners' Meeting (White Church Road area), M.M. Dillon Limited, February 1986;
- Results of the Third Series of Public Information Centres, M.M. Dillon Limited, April 1986;
- Report W86-204, No. 1, Noise Environment Study, Highway 6 (New), Hamilton to Caledonia, March 10, 1986, S.S. Wilson and Associates Ltd.;
- Revision I, Report W86-204, No. 2, Noise Environment Study, Highway 6 (New), Hamilton to Caledonia, September 15, 1986, S.S. Wilson and Associates Ltd.;
- Heritage Report, Ministry of Transportation and Communications, January 1987;
- Effects to Farm Operations, M.M. Dillon Limited, September 1986.

2. Introduction

2.1 The Environmental Assessment Report - One-Stage Submission

This report is a One-Stage Environmental Assessment Submission. The one-stage process allows for a one-time only Environmental Assessment to be carried out for a Group "A" project.

Part I of this report will document the following:

- the study purpose;
- the environmental assessment process followed;
- environmental conditions;
- alternative alignments evaluated, their environmental effects and potential mitigating measures;
- description of the recommended plan and its effects and mitigating measures;
- commitments to be undertaken for identified "environmentally significant areas/issues".

Part II of this report will document the following:

- traffic forecasts;
- design alternatives;
- general mitigation measures for construction;
- detail design requirements.

This Environmental Assessment Report is for submission to the Minister of the Environment for approval. Its approval will allow the Ministry of Transportation and Communications to:

- designate the recommended route;
- purchase property necessary for project implementation;
- complete the design and construct and operate the facility.

2.2 Justification for the Undertaking

The undertaking is an ultimate six-lane, fully grade separated, divided rural freeway with a design speed of 120 kph (RFD 120). Although this report deals specifically with the section of proposed Highway 6 (New) between the Hamilton Area and Caledonia, the entire corridor from Hamilton to Nanticoke is considered when addressing the issue of the need for a new facility.

Exhibit 2.1 shows Highway 6 (New) in relation to the freeway system in Southwestern Ontario. Without Highway 6 (New) there is no freeway access from the Hamilton area to the Nanticoke area on Lake Erie.

The identified need for a new transportation corridor between Hamilton and Nanticoke reflects municipal, provincial and federal aspirations to create an environment which will encourage planned development in the area. The new route is also needed to alleviate deficiencies in the access between the provincial freeway network and existing and planned developments in the Hamilton-Nanticoke corridor in order to establish a climate which is conducive to economic development.

Specifically, the need for Highway 6 (New) is based upon:

1. Improving access to the recently expanded Hamilton Civic Airport.
2. Encouraging industrial and residential growth in Nanticoke/Townsend and Hamilton-Wentworth.
3. Alleviating operational deficiencies on existing Highway 6.

The following sections expand on these issues.

2.2.1 The Hamilton Civic Airport and Airport Industrial Business Park

A major justification for Highway 6 (New) is to provide improved access between the Provincial freeway system and the Hamilton Civic Airport, including related commercial and industrial developments associated with its expansion. The Airport has recently undergone a major expansion to promote an improvement in air carrier service. Also, the Airport's draft Master Plan indicates that additional expansion can occur within the present boundaries.



According to Transport Canada, the level of service offered by the upgraded Hamilton Civic Airport will make it a viable alternative to Lester B. Pearson International Airport for passengers and freight from the Hamilton-Niagara-Brantford area.

The following statements were made in a letter dated August 17, 1982 to the Ontario Minister of Transportation and Communications from the Minister of Transport Canada:

Transport Canada's forecasts for the utilization of Hamilton anticipate a significant improvement of carrier service following the upgrading of the airport. It is my department's view that the more extensive the services, the greater the traffic and the greater the incentive to carriers to offer yet better service. With more services being offered at Hamilton, more travellers in the area should regard it as a viable alternative to Toronto International Airport (TIA), especially given the forecast increase in airside delays at TIA, and the increased traffic on the access highway.

In order to adequately serve this regional market and to realize the full potential of the airport, Transport Canada concluded that improved road access was required. The Minister's letter of August 17, 1982 continued as follows:

So as to exploit the full potential of the Hamilton Airport, it is essential that the road access be improved, not only for passengers from the City of Hamilton itself, but also from other cities and municipalities in the Hamilton-Niagara-Brantford area. Clearly, one of the most effective improvements would be to provide direct access to the Hamilton Airport from Highway 403.

This position was reiterated in a January, 1983 letter from the Federal Minister of Transport to the Ontario Minister of Transportation and Communications as follows:

With respect to long-term development of the Hamilton airport, I would like to reiterate the views of my Department that, should air traffic activity at Hamilton increase as forecast, it will be necessary to further improve road access to the airport by construction of the proposed new Highway 6 corridor to ensure that direct highway access is available to the airport.

Accordingly, Transport Canada has urged MTC to ensure direct highway access to the Hamilton Civic Airport from Highway 403. In his letter to the Chairman of the Regional Municipality of Hamilton-Wentworth dated 27 July 1982, the Federal Minister of Transport mentioned their

discussions concerning the "need for direct highway access to the Hamilton Airport, ideally from Highway 403."

Recent communication from the Minister of Transport Canada to the Ontario Minister of Transportation and Communications dated 9 April 1986 confirms the Ministry's position that "provision of regional access to Hamilton Airport would be a beneficial instrument for increasing the utilization of the airport." To that end, it is suggested that possible improvements to highway access to the airport would be desirable.

Copies of the Minister of Transport Canada's letters on this matter are included in Appendix A.

A Highway 403 to Highway 6 (New) connection would provide direct highway access to the airport and significantly increase its accessibility for the entire Hamilton/Haldimand-Norfolk/Niagara Peninsula/Brantford area. The Draft Hamilton Airport Master Plan confirms this need for regional accessibility. Transport Canada's regional planning staff are also concerned about under-utilization of the airport if highway access is not improved.

The Regional Municipality of Hamilton-Wentworth recognized the need for improving accessibility to the airport in their Official Plan policies. Section 9.5.5 of the Official Plan states that it is the policy of Regional Council:

To encourage the appropriate Federal and Provincial authorities to provide a controlled access road facility connecting the airport terminal to the freeway system in the Hamilton-Wentworth area in order to ensure a high degree of accessibility to the airport from all areas in the Region.

The Council of the Regional Municipality of Hamilton-Wentworth passed the following resolution on 15 October 1985:

That the Province of Ontario be urged to complete the first stage of No. 6 Highway to Hamilton Airport.

The City of Hamilton Council passed the following resolution on 31 January 1984:

That Council take prompt steps to approach the Provincial Minister of Transport, The Honourable James Snow, with a view to obtaining a commencement upon the implementation of a full interchange on Highway 403 and the Nanticoke Highway Corridor

as far as the Airport Road extension, at as early a date as possible.

The Hamilton and District Chamber of Commerce, in a letter dated 3 January 1984, encouraged the study of Highway 6 (New) to provide direct access between the Airport and Highway 403:

"We believe it is now the time to resolve the location of the north terminus of the Nanticoke-Hamilton Corridor (Highway 6). We believe it is important to provide a more direct access to the expanded Airport than is now being provided via Fiddler's Green Road at Highway 403, and that this should be one of the criteria for the study of this corridor terminus."

A report prepared by Regional staff, investigating existing and proposed access to the airport, concluded that:

The proposed full interchange at Highway No. 403 and the Nanticoke Highway Corridor to the Airport Road Extension is required as soon as possible to ensure an efficient and direct route from and to the Airport.

2.2.2 Haldimand-Norfolk Region

In 1968, The Steel Company of Canada (Stelco) acquired several thousand acres of land on the north shore of Lake Erie to develop a new steel making plant and the Lake Erie Industrial Park. There are now 9,000 acres of land commonly known as Nanticoke. It also contains an Ontario Hydro thermal generating station, a major Texaco Canada oil refinery, and a few small-scale steel related industries. Since the early 1970s, there has been little additional industrial development. There now remains approximately 4,000 acres of readily available, zoned, industrial land.

This land has good rail and ship access and most of it is fully serviced. Hydro power is readily available from the nearby thermal generating station. The lands are zoned for virtually all types of industrial uses, including the large-scale steel and refining activities currently underway. There is little other development nearby, and a buffer zone, a 3 km Industrial Influence Area, has been designated around the exterior properties of the Stelco mill, Hydro and Texaco sites in the City of Nanticoke District Plan so that new land uses which are incompatible with heavy industrial operations are restricted. In summary, the Nanticoke area is an ideal location for large-scale, heavy industrial uses. The services are provided and there are no other nearby conflicting land uses. However, the one missing piece of

infrastructure for these industrial operations is the lack of good highway access.

At the time of the development of the Lake Erie Industrial Park, the Ontario Government proceeded with the planning of Townsend as a major new community to accommodate the forecasted residential growth. In the Official Plan for the Haldimand-Norfolk Planning Area, Townsend was planned to accommodate a population of approximately 40,000 persons. Today, it contains a population of less than 2,700 persons.

Townsend/Nanticoke is thus an area of considerable unrealized potential in both industrial and residential growth.

It is widely held among municipal politicians, municipal staff, provincial civil servants, and industry representatives that a major reason for this growth not occurring is the poor access and that improving the accessibility of Nanticoke by the construction of Highway 6 (New) will encourage an acceleration in industrial development in Nanticoke and the corresponding residential development in Townsend.

In addition, many reports have concluded that the existing Highway 6, which is the main access route from Nanticoke to Hamilton, Toronto and points beyond, is inadequate.

In order to investigate these concerns, interviews were held (as part of this Study) with representative industries and trucking firms in the Highway 6 Corridor. Information was solicited from 14 representative firms in the areas of steel production, transportation, mining and refining. Those surveyed ranged in size from 20 to 1,400 employees and were generally located in Nanticoke, Caledonia, Hagersville, Simcoe, Cayuga, Port Dover, and Delhi.

Problem areas cited by many, if not all, of those interviewed were:

- i) Many truckers avoid Highway 6 where possible due to congestion in Hamilton and other communities. Truckers will travel considerable distance on other routes to avoid Highway 6 through urban areas.
- ii) There is very poor access from Nanticoke to the Provincial freeway system. Most notably Highway 6 does not connect to Highway 403. Such a connection would provide direct access to the Provincial freeway system.
- iii) There are significant operational problems relating to additional travel distance and turning movements, and speed change

requirements on the Caledonia Bypass. Many truckers remain on Highway 6 through Caledonia to avoid the Bypass.

Due to the nature of the industries in the Nanticoke area, mainly steel, mining and refining, trucks used for moving these goods are generally the largest and heaviest allowed by law. These types of trucks have considerable impact on urban areas by adding to congestion, noise, dust, vibration, and visual intrusion. These types of trucks are best carried by a freeway facility that avoids urban areas.

Many of the trucking firms have shown growth in recent years, adding considerably to their fleet of trucks and trailers. Representative industries attributed this growth to increased use of trucks for transporting finished goods. Recently manufacturers have modified inventory procedures and demand that material be supplied within very short time frames. This procedure, referred to as "just in time" or JIT inventory, has placed increasing demand on truck hauling as it is the only mode of transport that can meet these new stringent delivery requirements.

Thus, trucking firms and industries forecast increased reliance on truck movements even at existing production levels. In addition, many firms were "cautiously optimistic" about their growth, believing that they would grow along with the rest of the economy in general.

Most of those interviewed believed that a new Highway 6 facility would significantly improve their current and future operations. They believed improved access to Nanticoke is vital to increased economic development of the area and that historically, poor growth in the Nanticoke area can at least partially be attributed to the poor highway access.

The Director of Industrial Development for the Regional Municipality of Hamilton-Norfolk was also interviewed. He stated that many of the firms considering Nanticoke for new industrial sites have expressed concern about the area's lack of good highway access. There is a strong perception in the area that, as a result of this poor access, industries have selected sites other than Nanticoke.

The Director of Industrial Development feels strongly that improving the accessibility of Nanticoke by developing Highway 6 (New) would attract more industries and generate additional development, and help realize the growth potential of the area.

2.2.3 Hamilton-Wentworth

Highway 6 (New) is also seen as providing access to and stimulating development in the Hamilton-Wentworth Region.

Within the Town of Ancaster a major industrial business park has been designated at Duff's Corners (Highway 2 at Highway 53). It will be approximately 1,200 acres in size comprised of mainly lighter type industrial uses with some commercial/business use. Accessibility was a major factor in the planning of this business park and Highway 6 (New) was identified as a contributor to its success. The direct link via Highway 6 (New) to the Hamilton Civic Airport and Nanticoke enhances the business park's accessibility.

Also within Ancaster, a major residential development is planned just east of Highway 6 (New). This development, known as Scenic Woods, will ultimately support some 17,000 persons. Investigations have indicated that traffic generated by this additional development will overload the Mohawk Road/Highway 403 interchange, severely limiting access to Highway 403. Highway 403 serves areas to the west in Ancaster and Brantford and also lower Hamilton and points beyond in Burlington and Toronto. Additional access provided at the Highway 403/Highway 6 (New) interchange will offload the Mohawk Road/Highway 403 interchange, thus increasing regional accessibility to the future residents of Scenic Woods and improving the viability of the development.

To support Highway 6 (New), the Town of Ancaster Council passed a resolution on 13 May 1985, citing the strong need for a new highway to alleviate the increasing amount of traffic requiring access to and from Lake Erie destinations, and to serve the expanded Hamilton Civic Airport.

In the Township of Glanbrook, an industrial business park has been approved to encourage complementary airport-related industries. The business park is 300 acres and is located west of existing Highway 6, north of the Airport. This is adjacent to the area set aside under the Draft Hamilton Airport Master Plan for future long-term expansion and a new air terminal buildings. Highway 6 (New) will provide access to and from Highway 403 for both the Airport expansion area and the industrial business park, thus avoiding travel through the urban areas of Hamilton and Ancaster.

In addition, the Regional Municipality of Hamilton-Wentworth's Official Plan supports Highway 6 (New) by stating that it will improve

accessibility from Caledonia into Hamilton by accommodating traffic from Nanticoke to Hamilton-Wentworth, Toronto, and points east.

2.2.4 Purpose of the Undertaking

In summary, the purpose of the undertaking is to provide a fully grade separated freeway facility to:

1. Improve access to the recently expanded Hamilton Civic Airport.
2. Encourage industrial and residential growth in Townsend/Nanticoke and the Hamilton-Wentworth Region.
3. Alleviate operational deficiencies on existing Highway 6.

2.3 **Transportation Issues**

2.3.1 Transportation Objectives

To fulfill the purpose of the undertaking, Highway 6 (New) has the following objectives:

1. Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
2. Increase use of the Caledonia Bypass.
3. Improve access to and provide flexibility for development in Townsend/Nanticoke.
4. Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
5. Select a route which can be stage constructed in a realistic and economical manner.

The following sections will elaborate upon the objectives by outlining their rationale.

Objective 1 - Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.

The first objective is in response to the strong requests from Transport Canada, The City of Hamilton, The Regional Municipality of

Hamilton-Wentworth and local businesses for improved Airport access. Access today is only available via municipal roads, and local residents object to the use of such roadways as major transportation routes.

Objective 2 - Increase use of the Caledonia Bypass.

In response to municipal and local residents concerns over the use of the existing Highway 6 through the Town of Caledonia by heavy truck traffic, the Ministry of Transportation and Communications opened the Highway 6/Caledonia Bypass in 1983. Today, due to the extra turns and the additional distance required to use the Bypass, some truck traffic has elected to remain on old Highway 6 through the Town. The completion of Highway 6 (New) north of the Bypass will encourage truck traffic to completely avoid existing Highway 6 through Caledonia and thus will increase use of the Bypass.

The south end of the Bypass is the subject of another study, and improvements are planned in the near future that will encourage use of the Bypass.

Objective 3 - Improve access to and provide flexibility for development in Townsend/Nanticoke.

Municipal politicians, municipal staff, provincial civil servants, and industry representatives have been strong in stating that a new Highway 6 Corridor connection to the provincial freeway system will encourage an acceleration in industrial development in Nanticoke and the corresponding residential development in Townsend.

Objective 4 - Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.

Interviews with trucking firms and industries indicate that a major problem with existing Highway 6 is its poor connection to the provincial freeway system. These connections now require considerable travel through the urban areas of Hamilton. With Highway 6 (New) connected to Highway 403, most of the urban area of Hamilton is bypassed and truck traffic is carried by a route designed to carry heavy trucks.

Objective 5 - Select a route which can be stage constructed in a realistic and economical manner.

Construction of Highway 6 (New) is considered to be in the long term. However, pressure from area municipalities, Transport Canada, and

local businesses may require that Highway 6 (New) be built in stages. It is therefore desirable to select an alignment which will facilitate the incremental meeting of transportation objectives, while at the same time demanding only a reasonable level of capital investment.

2.3.2 Traffic Forecasts

In order to assess the travel demand between Caledonia and Hamilton, a corridor traffic forecasting and transportation analysis was undertaken. Population and employment forecasts were prepared for two growth scenarios: "anticipated" and "high" growth. From these, traffic projections were made for the three corridors discussed in Chapter 5.

2.3.2.1 Population and Employment Forecasts

The population and employment forecasts were prepared for the Highway 6 Corridor from Hamilton to Lake Erie, including the communities of:

- Hamilton Mountain
- Dundas
- Ancaster
- portions of Stony Creek
- Caledonia
- Jarvis
- Hagersville
- Townsend
- Nanticoke
- Simcoe
- Port Dover.

These forecasts were based upon information provided by the following agencies:

- Regional Municipality of Hamilton-Wentworth
- Regional Municipality of Halimand-Norfolk
- The Ontario Ministry of Transportation and Communications
- The Ontario Ministry of Treasury and Economics
- Statistics Canada

The anticipated population and employment projections assume that growth will proceed in accordance with past trends.

However, the Highway 6 Corridor also has the potential to go beyond past trend growth. The factors contributing to the potential for high growth include:

- complete expansion of Hamilton Civic Airport and total development of the Airport Industrial Business Park;
- completion of the development of plans for the new town of Townsend;
- predicted potential development of the Nanticoke (Stelco) works in the Lake Erie Industrial Park.

2.3.2.2 Airport Generated Traffic

Future traffic for the Hamilton Civic Airport was estimated based upon Transport Canada's projected four times increase in passenger travel above the 1980 levels. The forecast is for flight-related traffic only, it does not reflect traffic generated by the Airport Industrial Business Park. The total Airport vehicle trip generation in the year 2001 is estimated to be 4,300 vehicles per day.

2.3.2.3 Truck Traffic

Truck volume forecasts for the year 2001 were based on existing truck volumes factored by the change in employment levels. These volumes were assigned to the different corridors based on a truck origin-destination survey conducted in June 1984. Most truck traffic is comparatively long-distance trips from south of Caledonia to the industrial regions of Hamilton and to points beyond. Highway 6 (New) was assigned the majority of truck traffic in the area as it will provide good access to the freeway system to facilitate long-distance trips. In addition, the trips bound for Hamilton's industrial area will be able to avoid the congestion experienced through central Hamilton.

2.3.2.4 Automobile Traffic

To forecast automobile traffic, trip tables were developed for both the anticipated and high growth scenarios. For the new trip tables, trip production and attraction data, and gateway volumes were produced for both scenarios. The productions and attractions represent the number

of trips exiting (produced, entering, attractive) a zone. The gateways allow for trips to and from the areas external to the Study Area.

In addition to the existing provincial highways and regional roads, the network included the following major future roads:

- the North-South Parkway/East-West Arterial;
- the Highway 403 extension to Brantford and Woodstock;
- the Hamilton Industrial Perimeter Road.

2.3.2.5 Future Traffic Volumes

The forecasted volumes for Highway 6 (New) are shown in Table 2.1 along with the resulting level of service for a two, four and six-lane facility. Although approval is being sought for a six-lane freeway, it is likely that Highway 6 (New) will be built in stages. The table shows the resulting level of service for each of these stages based on year 2001 traffic projections. Traffic congestion will occur with a two-lane facility. Good levels of service, however, would be provided with a four or six-lane facility.

**TABLE 2.1
YEAR 2001 TRAFFIC PROJECTIONS**

| Scenario | AADT* | Percent Commercial | Level of Service ⁺ | | |
|---------------------|--------|--------------------|-------------------------------|-----------|----------|
| | | | Two Lane | Four Lane | Six Lane |
| Anticipated: | | | | | |
| North of Airport | 7,000 | 20 | C | A | A |
| South of Airport | 9,900 | 12 | D | A | A |
| High: | | | | | |
| North of Airport | 9,000 | 24 | D | A | A |
| South of Airport | 13,000 | 13 | E | B | A |

* Annual Average Daily Traffic

+ Level of Service is a rating of the amount of congestion and ease of traffic movement; Level A is the highest and best traffic service, Level F represents the worst traffic condition and is beyond the capacity of the facility.

Table 2.1 also shows the percentage of commercial vehicles (trucks). Generally highways carry approximately 10% commercial vehicles. However, due to the large industrial areas served by Highway 6 (New), the commercial vehicles represent 12% to 24% of the total traffic. This indicates the importance of Highway 6 (New) for providing access for industries in the Highway 6 Corridor to the Provincial freeway system.

Future daily traffic volumes (AADT) and design hourly volumes (DHV) are shown on Table 2.2 for the "do nothing" alternative. Congestion will be experienced under both growth scenarios.

2.4 Background

In 1974, the Ministry of Transportation and Communications undertook the "Highway 6 - Nanticoke to Hamilton Joint Use Corridor Study". The prime objective of that study was to identify an acceptable route for a new joint use transportation corridor (including a highway and major utilities such as Hydro and pipelines) between the Nanticoke area and Hamilton. The report on this study was issued in 1976.

**TABLE 2.2
EXISTING HIGHWAY 6 LEVEL OF SERVICE
YEAR 2001, DO NOTHING TRAFFIC FORECASTS**

| Scenario | AADT* (vph) | Level of Service ⁺ Existing 4 Lanes |
|---------------------|----------------|---|
| | | |
| Anticipated: | | |
| North of Airport | 22,440 | D |
| South of Airport | 15,080 | D |
| High: | | |
| North of Airport | 29,400 | F |
| South of Airport | 20,120 | D |

* Average Annual Daily Traffic

+ Level of Service is a rating of the amount of congestion and ease of traffic movement; Level A is the highest and best traffic service, Level F represents the worst traffic condition and is beyond the capacity of the facility.

At approximately the same time the MTC designated lands along Highway 403, between Fiddler's Green Road and Mohawk Road to protect land for an interchange with Highway 6 (New), should the west corridor be selected.

The Joint Use Corridor Study recommended an alignment for a new route between Nanticoke and Caledonia, including the now completed Caledonia Bypass.

However, the study concluded that the alignment for Highway 6 (New) between Caledonia and the Hamilton area should not be determined until:

- the Hamilton-Wentworth Official Plan was completed; and
- plans for the expansion of the Mount Hope Airport were confirmed.

With these issues resolved, the Ministry of Transportation and Communications in 1984 commissioned M.M. Dillon Limited to undertake "The Highway 6 (New) Hamilton to Caledonia Route Location and Preliminary Design Study".

3. Study Organization and the Environmental Assessment Process

3.1 Study Organization

3.1.1 Study Team

The project was headed by the Ministry of Transportation and Communications Central Region Planning and Design Section through a Project Manager and an Environmental Planner as indicated in Exhibit 3.1. This exhibit also illustrates the senior Dillon staff assigned to the Study.

S.S. Wilson and Associates, acoustical engineers, were used as noise subconsultants on this project.

3.1.2 Pre-Study

This section outlines work undertaken to allow for the preparation of the detailed study design. The following documents were reviewed in order to determine the background of the study:

- Justification Report;
- Consultant Terms of Reference;
- Highway 6, Nanticoke to Hamilton Joint Use Corridor Feasibility Study, March 1976;
- Municipal Official Plans.

In order to identify major factors affecting the project, discussions were held with senior MTC and Regional staff. These discussions identified the following factors as having particular significance:

- the Caledonia Bypass;
- the Hamilton Civic Airport;
- the Hamilton Mountain North-South Parkway and East-West Arterial;
- the existing MTC designation on Highway 403;
- the strong agricultural community;
- the need for a comprehensive public involvement process.

In addition, field visits were made to assess the general nature and character of the area.

Information collected in the pre-study allowed for the determination of the preliminary study area, the identification of significant constraints and controls for alignments, and the general direction and scope of the study.

3.1.3 Development and Review of Study Design

Based on the information collected above and the Consultant's experience with other similar projects, a detailed study design was prepared.

The study design provided a full list of tasks, activities and sub-activities for the entire route location, environmental assessment, and preliminary design phases. The study design included information on:

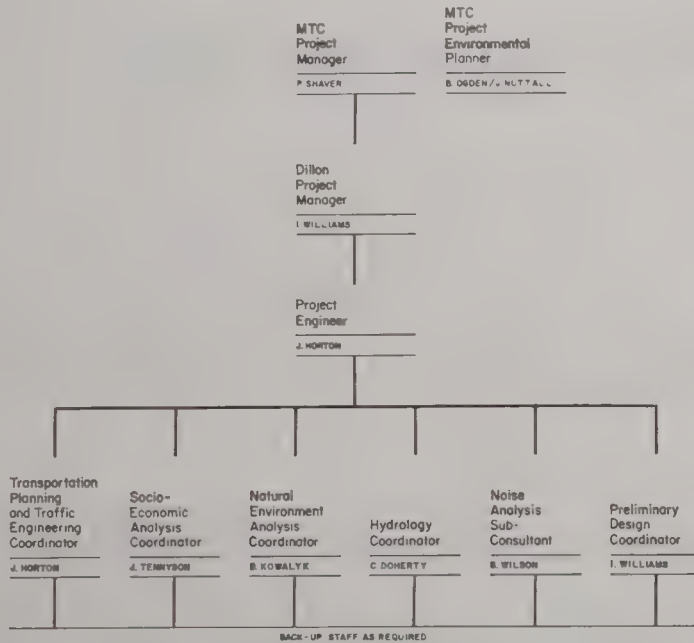
- Consultant's staff and organization;
- study schedule;
- list of external agencies;
- internal MTC involvement;
- person-days for each activity and task;
- methods for project control;
- a list of major assumptions;
- the study team;
- division of responsibility for tasks and activities between the Ministry and Consultant;
- the extent of public involvement and presubmission consultation.

There were a total of 19 activities and 53 tasks within the study design along with numerous sub-tasks.

One important step was Activity 3, "Confirm Intensive Study Area". The purpose of this activity was to screen out unacceptable corridors. This led to the definition of the Study Area.

A Draft Study Design was prepared and reviewed in detail by the Ministry of Transportation and Communications. It was subsequently modified by the Consultant. The final document was completed and approved in September 1984.

A Summary Study Design was prepared and forwarded to all external agencies, internal team members, and municipal staff. Comments were requested from all reviewing agencies. The Study Design was also discussed at the first External Team meeting held prior to the first series of Public Information Centres in June 1985. The summary Study Design was accepted by most reviewing agencies and no comments were received that required any modifications.



3.1.4 Determination of the Study Area

The pre-study identified three basic corridors for potential alignments between Caledonia and Hamilton. In order to keep the study to a realistic scope, it was decided that if any of the three basic corridors did not meet the required objectives of the new facility, then they would be abandoned without any further study. Section 5.4 of this report, "Corridor Alternatives", documents the comparison of the corridors with the objectives. This analysis led to the rejection of the East and Central Corridors. The Study Area was thus defined around the West Corridor. The Study Area is shown in Exhibit 3.2.

The exact extent of the Study Area was established to ensure that all reasonable effects of the various alternatives identified during the Study would be appropriately dealt with.

The current conditions for the natural environment, the social environment, and the engineering environment as described in Chapter 4, were gathered for this area.

3.1.5 Study Stages and Timing

Exhibit 3.3 shows the major study stages and timing of key events.

3.2 Pre-Submission Consultation

3.2.1 General

The pre-submission consultation process is a key component of the Environmental Assessment process. Pre-submission allows for the identification of issues early in the Study, providing the time and a process for dealing with these issues. The purpose of the pre-submission consultation is to provide an opportunity for the review ministries/agencies and the public to:

- review and comment on the study design;
- identify "environmentally significant areas/issues";
- be aware of the progress of the Study;
- be involved early and be able to review and comment on the findings at various stages of the Study.

The following sections describe the involvement of all contact external to the consultant and MTC team members. These agencies and their



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

Exhibit 3.2

Study Area

[illegible]

Highway 6 (New)

HAMILTON TO CALEDONIA

Exhibit 3.3

Major Study Stages and Schedule

interrelationship to the study are shown in Exhibit 3.4. These external contacts can be broadly defined by the following categories:

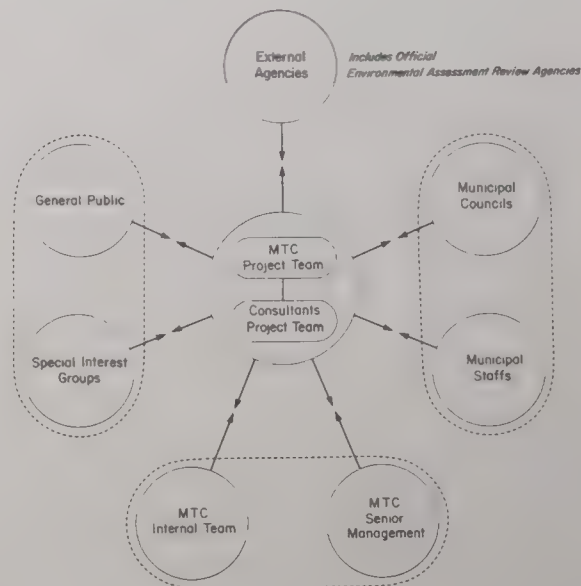
- affected municipalities (staff and elected representatives);
- government ministries and agencies;
- the general public;
- organized interest groups;
- the private sector;
- utility companies.

The major purpose of the in-depth and organized program of consultation with these groups can be summarized as follows:

1. To ensure that all relevant concerns of the various parties are given appropriate consideration.
2. To assist in the identification of environmentally significant areas/issues.
3. To ensure that all realistic alignment alternatives have been addressed.
4. To ensure that where any adverse effects of the recommended plan are unavoidable, these effects are minimized and the appropriate mitigating measures introduced.
5. To ensure that the project can be implemented and the appropriate approvals received by attempting to deal with all the issues and concerns prior to the formal environmental assessment review process.
6. To ensure that all appropriate work required beyond the planning stage (i.e. commitments to future work) is clearly outlined and documented.

The type of involvement of the various external contacts, their major comments and concerns, and the way in which these concerns have been dealt with are discussed in the following sections.

As part of the pre-submission consultation process, comments from reviewing agencies on the draft report are summarized in Appendix J.



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

Exhibit 3.4

**Various Teams
Involved in the Study**

3.2.2 Municipal Involvement

At the start of the project, each municipality designated a contact individual. Meetings were held with the contact individual and appropriate staff members throughout the study to review concerns and identify appropriate solutions. The schedule for these meetings are shown on Exhibit 3.3. The municipalities supplying assistance were:

- The Regional Municipality of Hamilton-Wentworth
- The City of Hamilton
- The Town of Ancaster
- The Township of Glanbrook
- The Regional Municipality of Haldimand-Norfolk
- The Town of Haldimand.

Elected representatives were kept fully informed of the status of the project through formal council presentations. The timing of these presentations is shown in Exhibit 3.3.

Appendix B to this report summarizes all the major comments made by the various municipal staffs and elected representatives, together with the methods in which these concerns were handled.

3.2.3 Government Agencies

Representatives of all government ministries and agencies who have the responsibility for review of and comment on environmental assessments were constituted into an external agency team. The external agency contacts are shown on Exhibit 3.3.

In addition to this format, several working meetings and contacts were held with individual ministries and agencies who had specific project-related concerns. Ministries and agencies with whom such meetings were held included:

- Ministry of Agriculture and Food;
- Ministry of the Environment;
- Ministry of Citizenship and Culture;
- Ministry of Natural Resources;
- Grand River Conservation Authority;
- Niagara Peninsula Conservation Authority;

- Transport Canada;
- Ontario Hydro.

Major comments and concerns raised by these agencies are noted in Appendix B which also explains how these concerns were dealt with.

3.2.4 The General Public, Organized Interest Groups and the Private Sector

These three categories of external contact were dealt with through the project's organized public participation program.

In summary, public contacts were made at the following study phases:

Start of Project

- April 1985 - Newspaper announcement and brochure mailing informing the public of the start of the project

Preliminary Assessment of Feasible Alternatives

- May 1985 - Newspaper announcement and Public Information Centre brochure distribution
- June 1985 - First Series of Public Information Centres held in Ancaster and Mount Hope

Detailed Evaluation of Feasible Alternatives and Presentation of a Technically Recommended Alignment

- October 1985 - Newspaper announcement and Public Information Centre brochure distribution
- October 1985 - Second Series of Public Information Centres held in the Unity Road Hamlet and Ancaster

Special Property Owners Meeting - White Church Road Area

- February 1986 - Direct mailing to affected Property Owners informing them of the special meeting
- February 1986 - Property Owners Meeting, White Church Road Area

Presentation of Recommended Alignment in Preliminary Design
Level of Detail

- March 1986 - Newspaper announcement and Public Information Centre brochure distribution
- April 1986 - Third Series of Public Information Centres held in Ancaster and the Unity Road Hamlet.

During the June and October 1985 and April 1986 series of information centres, the centres were open to the general public from 2:00 p.m. to 5:00 p.m and 7:00 p.m. to 9:00 p.m. Prior to one of the afternoon and evening sessions, special morning meetings were held with external team members during each series.

Detailed reports of the results of the Public Information Centres and the Property Owners Meeting are shown in Appendices C, D, E, and F of this report. These reports are entitled:

1. Summary of the Results of the First Series of Public Information Centres, Highway 6 (New) Hamilton to Caledonia, June 1985.
2. Summary of the Results of the Second Series of Public Information Centres, Highway 6 (New) Hamilton to Caledonia, October 1985.
3. Result of the Property Owners Meeting (White Church Road Area), Highway 6 (New), February 1986.
4. Summary of the Results of the Third Series of Public Information Centres, Highway 6 (New), Hamilton to Caledonia, April 1986.

In addition, interviews were held with 14 representative trucking firms and industries in the Highway 6 Corridor to solicit information on existing truck movements and problems, forecasted growth, type and extent of operation, and need for a new highway facility.

In addition, the Six Nations Indian Band was contacted throughout the Study so that any comments and concerns they might have could be identified. At the request of the Ontario Native Affairs Directorate, the New Credit Band was advised of the Study during the finalization of the Environmental Assessment Report.

3.2.5 Utility Companies

The following utility companies:

- Ontario Hydro;
- Union Gas;
- Bell Canada;
- TransCanada Pipelines;
- Interprovincial Pipelines;
- Trans Northern Pipelines;

were contacted or met with during the course of the Study to determine:

- the location of existing plants;
- any planned expansion or improvements of existing facilities;
- relocation or plant modification requirements and costs.

Information on municipally owned and operated services was obtained through the appropriate municipal officials.

Chapter 4 of this Report details the information received concerning major utilities within the general study area.

3.3 Process for Determining Environmentally
Significant Areas/Issues

The MTC has, in conjunction with the Ministry of the Environment (MOE), developed guidelines for the preparation of Environment Assessment Report One-Stage Submissions. With the one-stage submission process, it is important to deal with environmental issues at an appropriate level of detail to meet the concerns of the reviewing agencies and allow them to accept the document, leading to the eventual approval of the project. The study process and timing will obviously not permit that every single issue be dealt with at a final design level of detail. Consequently, to ensure that the more significant areas are appropriately dealt with, the one-stage submission guidelines have defined a procedure for identifying "environmentally significant areas and issues". These areas and issues must be dealt with satisfactorily in the Environmental Assessment Report.

The guidelines define environmentally significant areas/issues as follows:

"Areas/Issues of the natural, cultural, economic and social environment for which the reviewing ministries/agencies/the public require detail relative to specific environmental impacts and commitment to mitigation. This information is necessary to facilitate decision-making relative to the acceptance to the environmental assessment and approval of the undertaking."

In the pre-submission process for the preparation of this Environmental Assessment, issues or areas of the natural and socio-economic environment were considered to be environmentally significant (in terms of the requirements of a One Stage Environmental Assessment) if one or more of the following applied:

1. The area or issue was identified as environmentally significant in provincial, regional or local plans, policies or studies and was likely to be affected by reasonable alternative methods of carrying out the undertaking.
2. The area or issue was demonstrated as environmentally significant during the consultation process by any of the following:
 - external ministries or agencies;
 - municipalities;
 - interest groups;
 - the general public.
3. The area or issue was identified as environmentally significant during field surveys and investigations and analysis undertaken by the project team for the project.

Based on this approach, Environmentally Significant Areas and Issues (ESA/ESI's) have been identified for which additional analyses or investigation were required to achieve the selection of a recommended alternative and its preliminary design. ESA/ESI's are identified in Chapter 4. Chapter 5 outlines the evaluation of the alternatives, including the component elements of the ESA/ESI's used in the assessment. Chapter 6 provides a summary statement of the resolution of concerns for individual ESA/ESI's.

3.4 Commitment to Further Work

Throughout the study process of external team contacts, internal team meetings, and the organized public participation program, concerns

raised by any of these groups that required further work were documented. No concerns were identified that were unique and could not be accommodated through standard highway design techniques. These techniques will be documented in the Ministry of Transportation and Communications Design and Construction reports. These reports should be suitable for dealing with all concerns raised. The Design and Construction Reports will be submitted to the Ministry of the Environment a minimum of 30 days prior to construction. In addition, relevant agencies will be involved during the final design process.

To ensure that the commitments are carried out during construction, the Ministry of Transportation and Communications will undertake a program of construction monitoring.

4. Existing and Future Conditions

4.1 Introduction

The purposes of this Chapter are as follows:

1. To provide a description of the natural environment, socio-economic and cultural environment, transportation facilities, and major utilities within the identified Study Area.
2. To identify potential "environmentally significant areas/issues" (terms defined in Section 3.3).

NOTE: An actual listing of environmentally significant areas/issues affected by the eventually recommended plan is included in Chapter 6 of this report.

4.1.1 Definition of Study Area

The Study Area is shown on Exhibit 3.2.

The Study Area runs from Ancaster in the north to the north end of the Caledonia Bypass in the south. On the east the Study Area is defined by existing Highway 6, and on the west the Study Area is roughly bounded by Fiddler's Green Road and Glanaster Road.

During the early 1970s the MTC became aware of the increasing pressure to permit land development adjacent to Highway 403 in Ancaster. The 1976 Joint Corridor Feasibility Study identified only one feasible location for an interchange on Highway 403 between Fiddler's Green Road and Mohawk Road. Hence, in order to protect the location and also to allow appropriate adjacent development to proceed the MTC designated the interchange area from Highway 403 to Book Road. The results of this study are still valid and there are no other feasible locations for a new freeway-to-freeway interchange on this section of Highway 403.

In 1984, the Caledonia Bypass was opened as a two-lane facility, bypassing Caledonia on the west side. Ultimate plans are to twin the facility to provide a divided four-lane freeway. The Bypass currently terminates at Greens Road with an at-grade intersection.

The Study Area includes a portion of the City of Hamilton, the recently expanded Hamilton Civic Airport, the Village of Mount Hope, and the Unity Side Road Hamlet. The remaining portions of the Study Area are largely rural in nature with a strong agricultural base and some scattered residential development.

4.1.2 Organization of Sections

The documentation of existing and future conditions is divided into five sections:

- 4.2 - Natural Environment
- 4.3 - Socio-economic and Cultural Environment
- 4.4 - Summary of Environmentally Significant Areas/Issues
- 4.5 - Transportation facilities

4.2 Natural Environment

(See Exhibit 4.1 and Appendix I)

4.2.1 Climate

i) Data Sources, Reliability and Data Gaps

The source of climatic data for the Study Area is The Climate of Southern Ontario (Brown, D.M., G.A. McKay and L.J. Chapman, Environment Canada, 1980). The authors have used an internationally accepted interval, 1931 to 1960, for the computation of averages, thereby obtaining values which are comparable to those prepared for other areas. Large deviations from the mean may occur both daily and seasonally. This is a recognized reliable source and provides sufficient detail for this study.

ii) General Description

The Study Area is within the Lake Erie Counties Climatic Region, and the climate is moderated by proximity to the Lower Great Lakes. The northern part of the Study Area is within 10 km of Lake Ontario, although it is considerably higher than the lake because of the Niagara Escarpment. Higher elevations west of the area create a slight rain shadow effect. The topography in the northern part of the Study Area

increases microclimatic variation because of differences in slope position, aspect and natural air drainage.

iii) Significance and Sensitivity

In the past, the climate has proved amenable to the establishment of a variety of natural species, general and specialized farming, and human settlement. It is anticipated that Highway 6 (New) will not affect the general climate. There are no significant or sensitive climatic conditions in the Study Area which would affect the design and functioning of Highway 6 (New).

iv) Identified Environmentally Significant Areas/Issues

Climate is not considered to be an Environmentally Significant Issue for the purposes of this study.

4.2.2 Physiography

i) Data Sources, Reliability and Data Gaps

The Physiography of Southern Ontario (Chapman, L.J. and D.F. Putnam, Ontario Research Foundation, University of Toronto Press, 1966) and Map 2226 (scale 1:253,440) published to accompany that book are the main authorities on the generalized physiography of Southern Ontario. Elevations were established from maps of the National Topographic System at a scale of 1:25,000. The available level of detail is sufficient for interpretation of general sensitivity of physiographic conditions in the Study Area.

ii) General Description

The Study Area is located primarily on clay plains of the Haldimand Clay Plain Physiographic Region. Inclusions of till moraines, kame moraines, and sand plains occur in the northern part of the Study Area. Several drumlins occur near the southern edge of the Study Area.

Topographic relief is generally low. It is greatest in the northern part where elevations range from 190 m above mean sea level near Tiffany Falls to 256 m in the Hamilton Golf and Country Club (both areas being recognized Environmentally Sensitive Areas in the Study Area).

The physiographic types have provided a land base with the capability for the development of a considerable range of land uses, including soils for agriculture and materials for building.

iii) Significance and Sensitivity

In much of the Study Area, the low topographic relief indicates a fairly low sensitivity of landforms to disturbance from highway construction. Local areas of topographic variability, such as stream valleys and the ridge north of Book Road, provide a greater degree of landform diversity and sensitivity. This contributes to the environmental significance of these areas.

iv) Identified Environmentally Significant Areas/Issues

The physiography is not considered to be an Environmentally Significant Issue for the purposes of this Study.

4.2.3 Soils

i) Data Sources, Reliability and Data Gaps

The basic source of soil information for the area is Report No. 32 of the Ontario Soil Survey (Presant, E.W., R.E. Wicklund and B.C. Mathews, 1965, The Soils of Wentworth County). The soils mapping is at a scale of 1:63,360.

Canada Land Inventory (CLI) interpretations of capability for agriculture are based on this mapping. The CLI mapping for the Study Area was supplied by the Ontario Ministry of Agriculture and Food. The inherent limitations of the soil survey, particularly the scale and emphasis of classification toward agricultural utilization, should be recognized. If necessary, site-specific data gaps can be filled in at the detailed design stage.

ii) General Description

Sixteen soil types have been identified within the Study Area. Most soils are silt loams developed on tills on lacustrine deposits.

Coarse textured soils on sand and gravel are found only in the northern part of the Study Area. Soils in the Study Area are suitable for both agricultural production and urban development.

The Canada Land Inventory ratings of soil capability to produce common field crops are based on a scale from the best, Class 1, to the worst, Class 7.

iii) Significance and Sensitivity

The Study Area soils are rated almost entirely as Class 1 (70%) and Class 2 (20%) for agricultural productivity and are therefore considered to be a significant feature of the Study Area. Permanent removal of agricultural lands is difficult to mitigate and thus they are sensitive to highway construction.

Silty soils are sensitive to erosion. Erosion control can be performed during construction.

iv) Identified Environmentally Significant Areas/Issues

Agriculture, including loss of farmland, is an Environmentally Significant Issue for the purposes of this study.

4.2.4 Vegetation

i) Data Sources, Reliability and Data Gaps

Forest Regions of Canada (Rowe, J.S. 1972, Canadian Forestry Publication No. 1300) provides a general description of the plant geography of the country. The Forest Resources Inventory of the Ontario Ministry of Natural Resources has produced forest stand maps at a scale of 1:10,000 based on air photo interpretation (1979). Separate District Programs of the Ministry of Natural Resources ranked woodlots into five classes (mapped at 1:50,000 in Cambridge District and 1:10,000 in Niagara District). However, additional documentation was required for environmental assessment purposes and a reconnaissance field survey was undertaken by M.M. Dillon Limited to determine the significance of plant associations, to improve reliability, and to fill in data gaps at a site-specific level of detail.

ii) General Description

The Study Area is located within the Deciduous Forest Region. Here, very favourable climatic and soil conditions have allowed extension into Canada of many trees, shrubs and herbs from the deciduous forest of the east-central United States.

As most of the land has been cleared for agriculture and settlement, the natural forest vegetation has been reduced to remnant stands. These stands are mainly dominated by broadleaved trees such as beech, sugar maple, red oak, red maple, black cherry, bitternut hickory, shagbark hickory, white ash and basswood. Less common species include white oak, bur oak, butternut and black walnut.

Hop-hornbeam occurs in the understory and reaches dominance in heavily pastured locations. Disturbed areas also contain poplars, willows, hawthorns, elms and red ash.

White pine is one of the few conifer species that achieves representation in the natural woodlots. Some hemlock and white cedar occur near the Niagara Escarpment. Planted species also include scots pine, red pine, white spruce and norway spruce.

The remaining plantations and woodlands are being affected by agricultural practices and airport and urban expansions. The Ministry of Natural Resources (Niagara District) has established two new plantations of white pine and improved a degraded woodlot under Woodlands Improvement Act agreements in the southern part of the Study Area (see Exhibit 4.1).

iii) Significance and Sensitivity

The vegetation within the four identified "Environmentally Sensitive Areas" in the northern part of the Study Area near the Niagara Escarpment is considered highly significant (see Exhibit 4.1 and Appendix I).

The significance of vegetation units in the remainder of the Study Area required interpretation. Because of the large number of scattered units, a detailed comparison of species richness, rarity, productivity and sensitivity was not feasible. However, because environmental priority and replacement values generally increase with advancement in age and succession, the quality of vegetation units was assessed

primarily on the basis of: 1) maturity, indicating lack of disturbance; and 2) health, indicating potential longevity and productivity. This primary assessment was supplemented by an evaluation by M.M. Dillon Limited of vegetation diversity and rarity in the regional context.

After the field investigation by M.M. Dillon Limited, five general types or quality levels of existing advanced terrestrial communities characterized by woody vegetation were identified in the area as follows: 1) highest quality, well-stocked vegetation units; 2) maturing, representative woodlots; 3) immature or degraded woodlots; 4) advanced, old fields, shrublands, pioneer woods, and sparsely treed areas (not mapped); and 5) hedgerows and isolated specimen trees (not mapped).

The significance of individual units is a function of the size of the existing or potentially affected area as well as its quality. Official Plans for the Regional Municipalities of Hamilton-Wentworth and Haldimand-Norfolk indicate that areas of forest cover should be retained and managed or expanded. The Ministry of Natural Resources has expressed concern for the retention of woodlots with recognition to be given to quality classes and priorities arranged accordingly. Therefore, vegetation types 1, 2 and 3 described above were identified as being important for the purposes of this study.

The areas under Woodlands Improvement Act agreements are also significant in recognition of existing land use commitments and the management efforts expended.

The Grand River Conservation Authority has suggested a special survey of rare or significant plants along the right-of-way during detailed design for potential mitigation efforts.

iv) Identified Environmentally Significant Areas/Issues

Four municipally designated "Environmentally Sensitive Areas" have been identified in the northern portion of the Study Area. As such, they would merit consideration as Environmentally Significant Areas for the purposes of this assessment. However, no reasonable alternatives were considered which would affect these areas directly, and their regional significance was not a factor in the evaluation of the various alternatives. As such, they are not documented as Environmentally Significant Areas in this assessment.

Vegetation (woodlots and forest areas) is identified as an Environmentally Significant Issue, based on a request by the Ministry of Natural Resources.

4.2.5 Wildlife

i) Data Sources, Reliability and Data Gaps

The Ontario Land Inventory and the Canada Land Inventory have published maps, at scales of 1:50,000 and 1:250,000 respectively, indicating the capability of the land to produce habitat suitable for several species of wildlife. The Ministry of Natural Resources provided maps at 1:50,000 showing wildlife resources. Site visits were undertaken by M.M. Dillon Limited to supplement this information and fill in any data gaps. The Hamilton-Wentworth Region Environmentally Sensitive Areas Study (Ecologistics 1976) provides reliable lists of species and their status.

Additionally, several organizations with interest in the natural environment were contacted. These are identified in Appendix C.

ii) General Description

The wildlife of the Study Area is characteristic of agricultural areas in this Forest Region. The climate and soils have provided the capability to produce habitat with a high carrying capacity. The most sensitive period for wildlife population generally extends from April to August.

A considerable variety of bird species occurs. In the Hamilton-Wentworth Region, 76 bird species have been identified as common, compared to 27 mammal species and 15 herptile species. White-tailed deer are the largest animals and are generally confined to the vicinity of hedgerows and woodlots.

The fragmentation of habitat units has favoured species of wildlife adaptable to such conditions. Maintenance of the wide range of wildlife species is dependent on the existence of the remaining woodlots. Thus wildlife habitat quality in the Study Area is closely related to the area of forest cover.

The Ministry of Natural Resources and the Ontario Land Inventory have identified a location along the Welland River 2 km south of the

Hamilton Civic Airport as a Waterfowl Area. The field survey undertaken by M.M. Dillon Limited noted this area to be essentially a widening in the flood plain with numerous ox-bows and old channels. Willows line the river in many places. The area is used by waterfowl for nesting, brooding and staging. Although the Waterfowl Area offers some potential as a wildlife habitat, the diversity and quality of the habitat for wildlife is greatly enhanced by the forest communities to the west of the area. Appendix I contains species list for the waterfowl area and adjacent woodlots between White Church and Chippewa Roads.

A number of ponds throughout the Study Area also serve as nesting and staging areas for Canada Geese and some ducks. The vegetation around the ponds is either maintained grass or willow/hawthorn associations.

iii) Significance and Sensitivity

Four "Environmentally Sensitive Areas" have been documented for the Study Area. All are located in the northern portion of the Study Area (refer to Exhibit 4.1(c) and Appendix I). They are regarded as being highly sensitive and significant wildlife habitat areas, due to a combination of terrain features and locally and regionally rare species (vegetation and wildlife).

The waterfowl area identified between White Church and Chippewa Roads is a locally significant nesting area. It is not regarded as particularly sensitive however, as the woodlot area immediately to the west of it provides greater potential for more diverse habitats.

Other remaining natural vegetation units provide habitats for local wildlife and migrating bird populations. Additionally, several local ponds and streams provide waterfowl nesting and staging areas. These units and areas are not considered to be significant beyond the immediately local area of the site, and are not regarded as having any great degree of sensitivity.

iv) Identified Environmentally Significant Areas/Issues

The four "Environmentally Sensitive Areas" in the northern portion of the Study Area have been designated as regionally significant areas for protection in the Regional Municipality of Hamilton-Wentworth's Official Plan. As such, they would merit consideration as Environmentally Significant Areas for the purposes of this Study. However,

no reasonable alternatives were considered which would affect these areas directly and their regional significance was not a factor in the evaluation of the various alternatives. As such, they are not documented as Environmentally Significant Areas in this assessment.

The waterfowl area has not be regarded as an Environmentally Significant Area due to its comparatively low sensitivity in conjunction with adjacent woodlots.

Wildlife is not considered to be an Environmentally Significant Issue for the purposes of this Study.

4.2.6 Water Resources and Fisheries

4.2.6.1 Hydrology

i) Data Sources, Reliability and Data Gaps

Reliable data were obtained from published material from the Ministry of the Environment (Maps S100 and 3002-2) and topographic maps of the area (NTS, 1:50,000). The first map (S100) describes hydrogeologic environments and the susceptibility of groundwater to contamination. The second map (300-2) outlines watersheds within major drainage basins in southern Ontario. Details of their boundaries can be delineated on topographic maps (scale 1:50,000). This level of detail was sufficient to assess general sensitivity of the watercourses to effects associated with design and construction of new roads.

Field surveys by M.M. Dillon Limited at an overview level of detail, and subsequently at specific sites (potential alignment crossings) supplemented gaps in the regional mapping information. Well records were examined at Book Road and Unity Road to assess the potential for impacts associated with the deep cuts.

Discussions were also held with representatives of the Niagara Peninsula Conservation Authority, the Grand River Conservation Authority, the Hamilton Regional Conservation Authority, and the Ministry of Natural Resources throughout the study.

At the time of this Study, a proposed policy statement had been released for public comment under the Planning Act regarding Flood Plain Planning. This statement will be given consideration upon its finalization for any detail design requirements outstanding at that time.

ii) General Description

The Study Area includes the boundary between the Lake Ontario and Lake Erie drainage basins. Watershed units whose head waters touch on the Study Area include the Welland River, Twenty Mile Creek, Redhill Creek, Ancaster (Sulphur) Creek and the Grand River. Several small tributaries drain into the watercourses, including a number of channelized agricultural drainage ditches.

The Welland River and Twenty Mile Creek flow easterly through the Niagara Peninsula. Redhill Creek and Ancaster (Sulphur) Creek flow north to Hamilton Harbour. Downstream sections of Ancaster Creek have been identified as being prone to flooding and erosion by the Hamilton Regional Conservation Authority. Tributaries of the Grand River (flowing into Lake Erie) such as Seneca Creek cross the southern portion of the Study Area. Many of the small tributaries as well as the main channel of the Welland River stop flowing in summer (N. Tilt, MNR, personal communication).

The Study Area lies in an area of generally low susceptibility to groundwater contamination. Surface materials are finely textured, consisting predominantly of fine sands, silts, clays and glacial deposits. These materials have a low permeability and thus have a high capacity for the retention of contaminants. There are no significant shallow aquifers in the area. Because of the generally low relief of the land, contaminant movement in the groundwater is likely to be minimal. In this area, groundwater is usually obtained from overburden and bedrock wells and is used mainly for farm and domestic supplies.

iii) Significance and Sensitivity

The watercourses in this area are significant on a small local scale in providing drainage. It is also important to maintain flows in natural and man-made watercourses to prevent flooding in or above the floodplain limits and to not unduly affect the rights of upstream and downstream users. Proper hydraulic design should not increase downstream drainage and will maintain riparian rights. This is in keeping with the erosion and flooding concerns expressed by the Hamilton Region Conservation Authority for Ancaster Creek.

Sensitivity to erosion and sedimentation of streambanks by construction activities can be reduced by employing proper design and construction techniques to reduce impacts on stream hydrology. Chapter 6 documents the commitments to future work with respect to drainage concerns.

Groundwater resources in the rural portions of the Study Area are significant at a local level, as they provide the major source of water for domestic and agricultural uses. There are no significant shallow aquifers in the Study Area. Groundwater resources are sensitive to disruption only at the local level, normally as a result of major cuts.

iv) Identified Environmentally Significant Areas/Issues

Hydrology is not an Environmentally Significant Issue for the purposes of this study. The identification of possible groundwater effects at Book and Unity Roads as a result of cuts, contributed to the identification of these areas as Environmentally Significant Areas.

4.2.6.2 Surface Water Quality

i) Data Sources, Reliability and Data Gaps

Water quality data were available for the Welland River in the Ontario Ministry of the Environment's Water Quality Data for Ontario Lakes and Streams Series. The sample station near Binbrook (immediately east of the Study Area) is located 112.5 km upstream from the river mouth. No data were available for Twenty Mile Creek or the other smaller watercourses in the Study Area. A visual inspection and assessment made on all watercourses during site visits by M.M. Dillon Limited in May 1985 filled in data gaps on these small streams. Information noted for each watercourse included: width, depth, water quality, flow, and bank characteristics. These data provided reliable descriptions of typical early summer conditions for the watercourses in the Study Area.

Provincial water quality objectives are outlined in the Ministry of the Environment's publication on Water Management - Goals, Policies and Implementation Procedures (1978).

ii) General Description

The most recent water quality data (1984 and 1985) for the Welland River near the Study Area show the river to be generally typical of watercourses in agricultural areas. Parts of it have been channelized, and much of the overhanging bank vegetation which helps to maintain cool water temperatures has been removed.

Complete water quality records for 1984-85 were provided by MOE. An analysis of these data with respect to MOE's provincial water quality objectives indicated that total and fecal coliform counts exceeded provincial standards in most months. This is likely caused by agricultural drainage and animal watering upstream. Temperatures were generally in a range suitable for supporting warm water biota. Nitrogen and phosphorus concentrations also exceeded provincial guidelines in most months, indicating inputs from agricultural practices such as fertilization of fields in the surrounding area and at upstream locations.

The similar settings of the other watercourses in the Study Area would result in their having comparable water quality to that of the Welland River.

iii) Significance and Sensitivity

Good water quality is essential to ensure human health as well as to sustain and promote fish and wildlife populations and to support vegetation. In addition, clean water supplies are needed for agricultural and recreational uses. Watercourses in the Study Area provide adequate water quality for these uses but do not provide significant quality for rare or unusual species (e.g. brook trout).

Although it is recognized that construction activities may affect on-site and downstream water quality in a number of ways including erosion and sedimentation, appropriate design and construction techniques will mitigate these effects. Because of the generally low sensitivity of these already degraded streams, there should be no appreciable decrease in water quality which could affect downstream water use and aquatic habitat and fisheries potential in the Study Area as a result of the development of Highway 6 (New).

iv) Identified Environmentally Significant Areas/Issues

Surface water quality is not an Environmentally Significant Issue for the purposes of this Study.

4.2.6.3 Fisheries and Aquatic Habitat

i) Data Sources, Reliability and Data Gaps

There have been no stream inventories or creek censuses (i.e. fishing surveys) done on the watercourses in the Study Area. Data on species

occurrence were obtained from the Ministry of Natural Resources (Cambridge District; Niagara District). Stream fisheries potential in areas in and downstream from the Study Area are given in the Niagara District and Cambridge District Land Use Guidelines, Ministry of Natural Resources, 1983. Aquatic habitat surveys were undertaken by M.M. Dillon Limited to assess local watercourse conditions in the Study Area and to provide a site-specific level of detail at potential watercourse crossings. These surveys provide reliable descriptions of typical habitat for fish species found in the area.

ii) General Description

Field surveys undertaken by M.M. Dillon Limited revealed that the watercourses in the Study Area would provide, at best, only limited habitat for fish. Deforestation, agricultural practices, urbanization, water diversions and channelization have all contributed to degradation of both water quality and aquatic habitat. As a result, the capability of these streams to support fish populations within the Study Area is low.

The headwaters of the Welland River meander through the Study Area. The width of the main channel varied from 2 to 4 m, and the water quality could be considered to be typical of agricultural areas with high levels of suspended solids observed in areas of low flow. In addition there were several small stagnant pools. A few warm-water fish species may inhabit reaches where there is sufficient depth (R. Lewies, MNR, Niagara District, personal communication). These include rockbass, pumpkinseed sunfish, yellow perch, largemouth bass and various minnow species.

The stretches of Twenty Mile Creek, Three Mile Creek and the numerous small unnamed tributaries and channelized agricultural drainage ditches which lie within the Study Area boundaries do not contain suitable habitat for fish.

iii) Significance and Sensitivity

Disturbances have occurred within the Study Area through urban development and agricultural activities that have reduced stream quality to the point where the watercourses in the Study Area support few and mainly insignificant fish species. Due to their already degraded state, aquatic habitat in the watercourses would not be particularly sensitive to development, provided that environmental protection

measures are used during construction. Thus, there is little potential to further affect aquatic species within the Study Area.

However, water quality should be maintained at the work site through the use of acceptable environmental protection measures because of the presence of healthy fish populations downstream.

iv) Identified Environmentally Significant Areas/Issues

Fisheries and aquatic habitat are not Environmentally Significant Issues for the purposes of this Study.

4.3 Socio-Economic and Cultural Environment (See Exhibits 4.1, 4.2 and 4.3)

4.3.1 Existing Land Use

i) Data Sources, Reliability and Data Gaps

Data on the existing land use within the Study Area were obtained from the following reliable sources:

- the Regional Municipality of Hamilton-Wentworth Planning staff;
- the Regional Municipality of Haldimand-Norfolk Planning staff;
- the Municipal staff and consultants of the Town of Ancaster, the City of Hamilton, the Township of Glanbrook, and the Town of Haldimand;
- the Ontario Ministry of Transportation and Communications;
- Transport Canada, Airports and Properties, Ontario Region;
- extensive land use field surveys conducted by M.M. Dillon Limited staff between April 1985 and June 1985.

After consultation with all of the agencies listed above, a thorough review of the information collected was conducted. Subsequently, M.M. Dillon Limited staff carried out extensive land use field surveys to verify and update the existing land use.

Existing land use air photo mosaics identifying all land uses in the entire Study Area, including the names of commercial, industrial and

institutional establishments (except Mount Hope) were prepared. These are available upon request for viewing from the MTC Central Region Office.

ii) General Description of the Study Area

The existing land use in the Study Area is described in relation to the local municipality and to local, regional and provincial roads. The Study Area contains four local municipalities as follows:

- the City of Hamilton;
- the Town of Ancaster;
- the Township of Glanbrook;
- the Town of Haldimand.

The following text should be read in conjunction with Exhibit 4.1 which illustrates the existing land use.

City of Hamilton

A small part of the Study Area is located in the City of Hamilton. Generally it is bounded by the following physical features:

- the Hydro Corridor on the south (north of Twenty Road);
- Glancaster Road on the west;
- Highway 6 on the east;
- Highway 53 on the north.

This area forms part of Hamilton's southern boundary and reflects the pressures of urban development. An existing single-family residential subdivision is located at Highway 6 and Highway 53. The St. Elizabeth Village (a 300 unit retirement centre) is located just south of Highway 53, west of the existing subdivision. This is a self-contained development centre which also provides intensive care beds.

A number of commercial establishments are located along Highway 6 in this area including restaurants, gas stations, and car dealers. There are also several institutional uses including Corpus Christi Church and School and Mount Calvary Baptist Church.

Single-family residential development on large lots exists all along Highway 53 from Highway 6 to Glancaster Road. Some of these residences are associated with farm operations, but most are not because intensive farming is not prevalent in this part of the Study Area.

Town of Ancaster

The western portion of the Study Area is located in the Town of Ancaster in the Regional Municipality of Hamilton-Wentworth and is generally bounded by the following municipal roads:

- Townline Road on the south;
- Glancaster Road on the east;
- Mohawk Road on the north;
- Fiddler's Green Road on the west.

Golf Links Road, Highway 403, Highway 53, Book Road, Butter Road and Carluke Road are the other main east-west transportation routes; and Southcote Road and Fiddler's Green Road are the other main north-south routes.

The area south of Highway 53 is generally characterized by rural land uses, predominantly agriculture. Significant land use features in Ancaster include:

- the Ancaster Animal Cemetery;
- the Braun Nursery, an extensive tree farm operation located at Carluke Road and Glancaster Road;
- the Oak Run Farms (a large bakery operation undergoing expansion) located at the southeast corner of Fiddler's Green Road and Carluke Road.

A number of local commercial/retail operations are located along Highway 53 including gas stations, restaurants and convenience stores. A major landmark in this area is the Ancaster Fair Grounds located at Kitty Murray Lane and Highway 53.

The area to the north of Highway 53 consists mainly of urban uses, predominantly single-family residences along with local commercial/retail and institutional uses. The largest concentration of homes is northwest of Highway 403. Areas southeast of Highway 403 are largely rural with some residential development along the major roads. In addition there are several significant land uses in this area including:

- the Hamilton Golf and Country Club located south of Golf Links Road between Southcote Road and Fiddler's Green Road;



Highway 6 (New) HAMILTON TO CALEDONIA



- Study Area Boundary
- Residential
- Industrial
- Commercial
- Institutional
- Conservation: Open Space: Park and Recreation
- Rural and Agricultural

- 1 Recognized Environmentally Sensitive Areas
- 2 Highest Quality Vegetation (Mature, Healthy, Diverse)
- 3 Maturing Representative Woodlots
- 4 Immature or Degraded Woodlots
- 4 Woodlands Improvement Act Agreements (MNR)
- Streams with Warm Water Fisheries

Exhibit 4.1(a)

Existing Conditions



Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

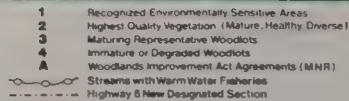
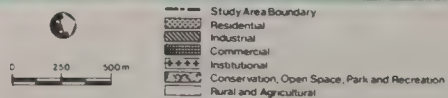


Exhibit 4.1(b)

Existing Conditions



Exhibit 4.1(c)

Existing Conditions

- the Ontario Hydro transformer station - one of the primary transformers in the area located just south of Golf Links Road and west of Upper Horning Mountain Road;
- a pumping station and water reservoir which is located at Glancaster Road and Highway 53.

A designation was laid down in 1975 to protect for an interchange between future Highway 6 (New) and Highway 403. The portion of the designation north of Highway 53 is owned by MTC.

A licensed gravel and sand pit has been identified within the designation by the Ministry of Natural Resources on part of Lot 45, Concession 3, Ancaster. MNR also identified that the potential for the loss of this mineral aggregate resource of secondary significance would not be expected to affect the long-term availability of sand and gravel in the area. As such, the effect of Highway 6 (New) on this potential aggregate resource has not been considered to be environmentally significant for this assessment. (It should be noted that the presence of such a potential resource within the proposed right-of-way of the undertaking will require consideration of its use for construction purposes during detail design). The identification of this mineral aggregate resource has been included in this Study, in consideration of the Mineral Aggregate Resources policy statement made under the Planning Act.

Township of Glanbrook

The eastern portion of the Study Area is located in the Township of Glanbrook in the Regional Municipality of Hamilton-Wentworth and is generally bounded by the following features:

- Townline Road on the south;
- Highway 6 on the east;
- Hydro Corridor (south of Highway 53) on the north;
- Glancaster Road on the west.

Other major east-west transportation routes include Twenty Road, Dickenson Road, Airport Road, White Church Road, Chippewa Road and Leeming Road. There are no other major north-south roads between Highway 6 and Glancaster Road in this area.

The Glanbrook part of the Study Area is diverse in terms of its land use. Although Glanbrook is mainly an agricultural area, there has been a significant amount of urbanization.

Mount Hope is located at Highway 6 and Airport Road. Comprised of mainly older single-family homes, the village is also the centre of public and commercial facilities serving local needs and those of the surrounding agricultural area.

To the north of Mount Hope is the Hamilton Civic Airport which occupies most of the land between Airport Road and Dickenson Road from Highway 6 to Glancaster Road. The airport is owned by Transport Canada and leased to the City of Hamilton for operation. With its recent expansion and expected traffic increase, the Hamilton Civic Airport has the potential to become an important regional airport.

A significant amount of residential and commercial development has occurred along Highway 6 in Glanbrook. The commercial activity along Highway 6 includes restaurants, gas stations and other similar establishments. A number of single-family houses front onto Highway 6 in the area from the Hydro Corridor to Townline Road. Many of the houses are located on lots which have been created adjacent to older farm residences.

Single-family residential development on large lots has occurred along all of the main roads in the Glanbrook area. In some instances these are the original farm houses; but, for the most part, new residential development has occurred more recently on lots which have been severed from the original holding. This development is especially prevalent along Glancaster Road, Dickenson Road and Twenty Road.

In addition to the uses already described, other important land uses in the Township of Glanbrook include:

- the residential development along White Church Road, immediately west of existing Highway 6;
- the Mount Hope Golf and Country Club located south of Dickenson Road along Highway 6;
- the Hamilton-Wentworth Transit Centre which is a primary regional bus terminal and garage and is located on Highway 6 midway between Twenty Road and Dickenson Road;
- the Oriental Nurseries and Garden Centres Ltd. on the west side of existing Highway 6 south of White Church Road.

Town of Haldimand

The southern part of the Study Area is located in the Town of Haldimand in the Regional Municipality of Haldimand-Norfolk. It has the following boundaries:

- Greens Road in the south;
- Highway 6 in the east;
- *Townline Road in the north;
- Lot 17, west of Mines Road, on the west.

The area is generally rural, and agriculture is the predominant land use. However, some residential and commercial development has occurred along existing Highway 6. In addition, the Unity Side Road Hamlet exists along Unity Road from Highway 6 to Mines Road. The hamlet contains mainly single-family homes on large lots as well as two institutional uses - i.e., the Seneca Unity School and the Wesleyan Methodist Unity Church. There are also a number of residences along Mines Road, west of the Unity Side Road Hamlet.

Some industrial development has occurred on the south side of Greens Road just east of the Caledonia Bypass. Three industrial type buildings are presently located in this area.

iii) Significance and Sensitivity

The significance and sensitivity of the existing land uses were determined by examining the magnitude and significance of the potential effects, if any, of the alternative alignments on these land uses based on information collected throughout the study from the external agencies and the public. Additional studies were also conducted of particular areas and issues to better understand the significance of these uses to the local area and its residents.

The sensitivity of particular land uses to the specific effects of the alternative alignments of Highway 6 (New) are indicated in Table 4.1, Sensitivity of Existing Land Uses. This table does not refer to effects which may occur during construction, these potential effects are discussed with respect to the recommended alignment in Chapter 6.

* Townline Road is the boundary between the Regional Municipalities of Hamilton-Wentworth and Haldimand-Norfolk.

The significant areas and issues which emerged from the public and local government consultation process, the external team members, and the Study Team's studies and analyses are documented below.

Property Effects

Based upon comments received from local residents, the municipalities, and external team members and the Study Team's analysis, effects to property - both direct takings and proximity effects - is a significant issue.

Agriculture

Agriculture and the preservation of good quality agricultural land and viable farming operations is considered a significant issue based on the character of the Study Area, the Ontario Food Land Guidelines, the Ontario Ministry of Agriculture and Food's mandate and concerns expressed by municipal representatives and residents of the area.

Detailed investigations were undertaken by M.M. Dillon Limited of the potential effects of the development of Highway 6 (New) on agricultural operations in the Study Area and on their significance to the local area. These investigations included field surveys, questionnaire surveys of local farmers, and meetings with OMAF staff, including the district representatives, and local farmers. The results are documented in the report "Effects to Farm Operations". This report is included as Appendix G.

At the time of this Study, a proposed policy statement had been released for public comment under the Planning Act regarding Foodland Preservation. This statement will be given consideration upon its formalization for any detail design requirements outstanding at that time.

Ancaster Animal Cemetery

Based upon the level of concern expressed by plot owners in the Ancaster Animal Cemetery, the pet cemetery contributed to the recognition of Book Road as an Environmentally Significant Area.

Following the first series of Public Information Centres, the size and viability of this commercial operation was determined. A meeting was

TABLE 4.1
SENSITIVITY OF EXISTING LAND USES

| Types of Uses(s) | Sensitivity |
|--------------------------|---|
| Residential | <ul style="list-style-type: none"> ° Property Effects <ul style="list-style-type: none"> . loss of buildings, property ° Proximity Effects¹ <ul style="list-style-type: none"> . changes in ambient environment: noise, visual, amenity (quality of life) ° Accessibility Effects <ul style="list-style-type: none"> . changes in residential access and access to other facilities and services |
| Community/Hamlet | <ul style="list-style-type: none"> ° Property Effects <ul style="list-style-type: none"> . loss of buildings, property ° Division of Existing Community/Hamlet ° Disruption to Existing Community/Hamlet (Proximity Effects) <ul style="list-style-type: none"> . changes in community character, ambient environment: noise, visual, amenity (quality of life) ° Accessibility Effects <ul style="list-style-type: none"> . changes in access to community services and facilities |
| Agriculture ² | <ul style="list-style-type: none"> ° Property Effects <ul style="list-style-type: none"> . loss of land, including specialty crop lands, farmsteads, buildings . creation of farm severances: new units and landlocked parcels ° Accessibility Effects <ul style="list-style-type: none"> . changes in access and farm machinery movements |
| Commercial/Industrial | <ul style="list-style-type: none"> ° Property Effects <ul style="list-style-type: none"> . loss of buildings, property, parking area ° Proximity Effects <ul style="list-style-type: none"> . changes in ambient environment: in particular changes in exposure/visibility to transportation corridors ° Accessibility Effects <ul style="list-style-type: none"> . changes in pedestrian or vehicular access to particular uses |
| Institutional | <ul style="list-style-type: none"> ° Property Effects <ul style="list-style-type: none"> . loss of buildings, property, play area ° Proximity Effects <ul style="list-style-type: none"> . changes in ambient environment: noise, visual, atmosphere or character ° Accessibility Effects <ul style="list-style-type: none"> . changes in pedestrian or vehicular access |

1. Additional discussion of visual and noise effects is provided in Sections 4.3.3 and 4.3.5

2. Further discussion of the potential effects to agricultural land use in the Study Area is documented in the report "Effects to Farm Operations".

held with its owner who indicated that the pet cemetery was a very successful commercial operation comprising 2,000 plots. The plots are also of considerable intrinsic and sentimental value to the individual plot owners. On receipt of this information, the individual plot owners were contacted through advertisements placed in the local newspapers by MTC. They were also contacted by the owner. Their numerous responses by telephone and by mail and at the subsequent Public Information Centre indicated their concerns with respect to any removal or dislocation of the existing cemetery.

White Church Road

As a result of the local municipality's and the residents' concerns, the White Church Road area is considered to be an Environmentally Significant Area.

During and after the second series of Public Information Centres, concerns were expressed by residents living nearby and alongside White Church Road and by the municipal council with respect to property takings, proximity effects such as noise and visual impacts, and the realignment of White Church Road with its resultant changes in traffic patterns and residential access. As a result, additional studies including further detailed field investigations were undertaken in this area by M.M. Dillon Limited. Changes were then recommended to the interchange in this location with a new link proposed between Highway 6 (New) and existing Highway 6.

When these changes were presented to the affected residents and the municipal council, further concerns were raised by some of the owners of local businesses along existing Highway 6 about the effects of future traffic reduction on their operations with the development of Highway 6 (New). Some concern was also expressed with respect to their visibility. However, the traffic analysis undertaken by M.M. Dillon Limited indicated that most of these commercial uses in the vicinity of White Church Road would be exposed to virtually the same amount of traffic that exists today and any of the other alignment alternatives would result in lower traffic volumes in the vicinity of the commercial uses along Highway 6. In addition, most of these commercial enterprises do not rely primarily upon 'passer-by' traffic for their livelihood. Many of them would have an established clientele of area residents and thus would be largely unaffected by changes in traffic patterns. Finally, most of the existing commercial uses will be visible from the new roadway link between Highway 6 (New) and existing Highway 6.

Unity Side Road Hamlet

Based on its designation as a hamlet in the Official Plan for the Haldimand-Norfolk Planning Area and in the Town of Haldimand District Plan, the views of local residents and officials, and the Study Team's investigations, the Unity Side Road Hamlet is considered to be an Environmentally Significant Area.

An in-depth study was conducted by M.M. Dillon Limited to determine the sensitivity of the hamlet to the development of Highway 6 (New). This study comprised additional field investigations, interviews, and archival research. Particularly important issues which were addressed were the church, which has only one service per year, the effects to school, community cohesion, noise, and visual impacts.

4.3.2 Future Land Use

i) Data Sources, Reliability, and Data Gaps

The future land use of the Study Area is determined by the following Regional Municipal and Area Municipal Official Plans:

- Regional Municipal Official Plans

- . The Regional Municipality of Hamilton-Norfolk Official Plan which received approval from the Minister of Municipal Affairs and Housing in March 1982;
- . The Official Plan for Haldimand-Norfolk Planning Area which was approved for most of the Planning Area in August 1983. (A small portion, outside of the Study Area, has not been approved by the Ministry of Municipal Affairs.)

- Area Municipal Official Plans (or District Plans)

- . City of Hamilton Official Plan which was approved in September 1982;
- . Town of Ancaster Official Plan which was approved in July 1984;
- . Amendment No. 11 to the Official Plan of the Hamilton Wentworth Planning Area (Glanford section) which is now in the Township of Glanbrook. It received approval from the Minister of

Housing in 1964. Amendments to it were examined up to 1985. Use was also made of the Regional Municipality of Hamilton-Wentworth Official Plan update material for Glanbrook;

- . Town of Haldimand District Plan which was approved in December 1983.

In order to update the Official Plans and to ensure accuracy in their interpretation, regional and local planning staffs (consultants in some instances) were contacted. This information was plotted on air photo mosaics and appears as Exhibit 4.2.

ii) General Description of the Study Area

The future land use within the Study Area is described with respect to the local municipality and to local, regional and provincial roads.

City of Hamilton

The Official Plan of the Regional Municipality of Hamilton-Wentworth designates the Hamilton part of the Study Area as "Residential" and "Related Uses".

The Official Plan for the City of Hamilton designates most of this land as "Residential" in conformity with the Regional Official Plan. The Hamilton Official Plan also designates three areas as "Major Institutional" as follows:

- i) a 400 m strip of land located east of Upper James Street that stretches from Rymal Road south to the city limits;
- ii) a small area containing the St. Elizabeth Village which is currently being expanded; and
- iii) another small parcel located just north of the city limits along Highway 6.

"Commercial" use has been designated for the four quadrants at the intersection of Rymal Road and Upper James Street, which is in keeping with existing commercial activity in the area.

In summary, this part of the Study Area will continue to develop as it has in the recent past with mainly single family detached homes and

compatible institutional and commercial uses such as the St. Elizabeth Village and the existing commercial retail outlets, along Rymal Road and Upper James Street.

Town of Ancaster

A significant amount of growth is designated for the area north of Highway 53 in Ancaster. The Regional Official Plan for Hamilton-Wentworth designates most of this area as "Residential and Related Uses" and to a lesser extent as "Industrial - Business Parks".

The Ancaster Official Plan designates this area as mostly "Residential". In addition, a significant amount of land is designated "Industrial" between Mohawk Road and Golf Links Road. There are also some lands within the residential area designated for "Commercial", "Institutional", "Open Space", and "Conservation" uses. The Ancaster Official Plan refers to this area as the "Mohawk and Golf Links Communities" (now called Scenic Woods). It is anticipated that at completion this area will contain an additional 25,000 people.

The Regional Municipality of Hamilton-Wentworth's Official Plan designates the remainder of the Ancaster part of the Study Area, mostly south of Highway 53, as "Rural" and is intended for mainly agricultural purposes.

The Ancaster Official Plan reflects the Regional Official Plan in designating the remaining area as "Agricultural". Therefore the area south of Highway 53 in Ancaster is not expected to change significantly from its current state of existing development.

Township of Glanbrook

Within the Official Plan of the Regional Municipality of Hamilton-Wentworth most of the Township is "Rural" with the exception of Mount Hope which is "Rural Settlement", and the lands surrounding the Hamilton Civic Airport have been designated "Business-Industrial Park" by the following amendments to the Regional Official Plan:

- Official Plan Amendment No. 12 designates the lands north of Twenty Road at Highway 6 as "Business-Industrial Park" and is intended to facilitate the establishment of airport-related commercial uses.



Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report



- Legend**
- Study Area Boundary
 - Residential
 - Commercial
 - Institutional
 - Conservation, Open Space, Park and Recreation
 - Rural and Agricultural

- Hazardous Lands
- Mined Area

Exhibit 4.2 (a)

Official Plan Designations



Exhibit 4.2(b)



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

● Airport Boundary Based on Hamilton Civic Airport Draft Master Plan

Official Plan Designations

Exhibit 4.2 (c)

- Amendment No. 15 redesignates much of the land surrounding the Airport. A strip of land along Highway 6 from Twenty Road to Airport Road is designated as "Industrial-Business Park". In addition, the amendment redesignates most of the land to the northwest of the Airport (see Exhibit 4.2) as "Special Policy Area 1".
- "Special Policy Area 1" is intended to be developed for industrial and commercial purposes as demand for airport related facilities warrants it.
- The Glanbrook Official Plan is now in the process of being updated and will, accordingly, reflect the designations in the Regional Official Plan. The local Official Plan currently designates most of this area as agricultural. It also designates lands in the Mount Hope area as "Village Residential" and "General Commercial".

Therefore, the general rural character of Glanbrook is not expected to change except in the vicinity of the Hamilton Civic Airport and Mount Hope as described.

Town of Haldimand

The Official Plan for the Haldimand-Norfolk Planning Area contains broad policies with which the Haldimand District Plan conforms. The specific land use designations for the Haldimand part of Study Area are contained in the District Plan.

The primary future land use of this area will continue to be agriculture. There are also other types of future land use including:

- Unity Road from Highway 6 to Mines Road is designated as "Hamlet", and the predominant use will continue to be single-family residential with ancillary commercial and institutional uses.
- The area extending north along Mines Road from Greens Road to the continuation west of Greens Road is designated as "Mined Area" which generally restricts surface use to agriculture.
- The area east of the Caledonia Bypass to Highway 6 on the south side of Greens Road is designated "Industrial". At present three industrial type buildings exist in this location.

Therefore, as is the case with a majority of the Study Area, most of the future land use in the Haldimand section is expected to remain rural and agricultural.

Section ii) has presented a generalized summary of the future land use in the Study Area. Greater detail air photo mosaics that illustrate all future land uses are available for viewing upon request from the MTC Central Region Offices.

iii) Significance and Sensitivity

The sensitivity of future land uses to the development of Highway 6 (New) was determined by examining the potential effects - both positive and negative - to future land uses of the alternative alignments. These uses and their effects are documented in Table 4.2. The significance of these uses and their relationship to Highway 6 (New) was determined by the local municipalities, the external team, the area residents, and the Study Team.

TABLE 4.2

SENSITIVITY OF FUTURE LAND USES

| Future Land Use(s) | Sensitivity |
|-----------------------|--|
| Residential | <ul style="list-style-type: none"> • Prevention of infilling in the Unity Side Road Hamlet, in the White Church Road area (south of Mount Hope), and a limited amount throughout the Study Area • Creation of new development parcels • Pressure for redesignation due to improved access |
| Commercial/Industrial | <ul style="list-style-type: none"> • Facilitation of airport expansion and related commercial and industrial development • Creation of new development parcels |

The significant areas and issues are as follows:

Airport Expansion and Increased Usage

Improved access to the newly expanded airport is expected by Transport Canada to lead to increased use of the airport. In addition, the long-range plans of Transport Canada call for the further expansion of the Hamilton Civic Airport to the north of the current facility (see Exhibit 4.2). Accordingly, the design of Highway 6 (New) should facilitate these plans through its route and interchange locations.

White Church Road Area

The Township of Glanbrook requested that future urban development south of Mount Hope down to White Church Road should not be precluded by the development of Highway 6 (New) and the link roadway originally proposed between it and existing Highway 6. (The recommended plan accommodates this requirement.)

Unity Side Road Hamlet

The future development of the Unity Side Road Hamlet was considered a significant issue in this study. Detailed investigations were undertaken by M.M. Dillon Limited as discussed in Section 4.3.1 iii) to determine the effects of Highway 6 (New) on the hamlet. The main impacts to the hamlet would be the loss of community through the "barrier" effects created by the highway and the loss of residential units.

4.3.3 Visual Resources

i) Data Sources, Reliability and Data Gaps

No data was available on visual resources thus, to supplement this gap, visual resources of the Study Area were investigated by Dillon staff in conjunction with the MTC Central Region Historical Planner. Investigations were undertaken through field inspection and analysis of topographic maps and air photos.

These investigations are suitable for route planning and preliminary design purposes.

ii) General Description

The Study Area was divided into units that exhibited homogeneous trends, characters and features of the natural, heritage and social environment. Thus the general description of the Study Area from a visual perspective overlapped considerably with that presented in Section 4.3.4.1, Historical.

The Study Area was divided into:

- a) cultural landscape zones;
- b) cultural landscape units;
- c) visual landscape units.

Cultural landscape zones are in areas that have homogeneous attributes defined on a regional scale. Cultural landscape units are areas that exhibit homogeneous attributes defined relative to the specific characteristics of the Study Area. Visual landscape units are areas defined within the cultural landscape unit that are spatially defined by topography, vegetation, or land use.

Six cultural landscape zones were identified primarily based on a pattern of lot division, road layout, character of the natural environment, building character, and land use pattern.

Twenty-two cultural landscape units were defined in the Study Area based upon the Ministry of Culture and Recreation "Guidelines on the Man-made Heritage Component of Environmental Assessments".

Visual landscape units were identified where areas were distinctly defined by topography, vegetation, or land use. Units were delineated where these elements gave them discreet spatial definition.

iii) Significance and Sensitivity

The purpose in describing landscape character is to judge the significance and evaluate the impact of various route alternatives in disrupting the key elements giving form, structure and identity to the Study Area. Information gathered during the inventory phase was used to help guide the location of route alternatives to minimize impact on landscape character.

The pattern of lot division, road layout, and character of the natural environment guided the location of the possible alignments. The form

and structure of the area is sensitive to highway construction, however, disruption was minimized by the alignment following the orientation of the lots and existing roads.

iv) Identified Environmentally Significant Areas/Issues

The visual impacts of Highway 6 (New) were important considerations in identifying Unity Road, White Church Road and Book Road as Environmentally Significant Areas.

4.3.4 Heritage Resources

4.3.4.1 Historical

i) Data Sources, Reliability, and Data Gaps

An investigation of heritage resources (historic, architectural and aesthetic) has been undertaken by the MTC Central Region Historical Planner. Its findings are presented in a separate technical report: "Investigation of Heritage Resources - Highway 6 (New), Hamilton to Caledonia, W.P. 36-84-00". Because of the large size of this report, it is not included in an appendix to this Environmental Assessment Report. Copies will be provided to the Ministry of Citizenship and Culture, and to other review agencies upon request. Copies will also be available at the locations identified for review by members of the public.

The investigation of heritage resources was undertaken between 1984 and 1986. It included field inspections and windshield surveys, historical research using the resources of the Archives of Ontario and the Toronto Public Library, and contact with numerous local and provincial heritage groups or organizations.

The level of investigation is more than adequate for route planning and preliminary design highway study. Heritage resources were identified and evaluated on the basis of observable characteristics and documentary or other evidence. The data and evaluations may be regarded as being reliable, given that investigations of this sort can never be definitive.

ii) General Description of the Study Area

The investigation of heritage resources has been undertaken with reference to cultural landscape characteristics and built environment features identified within the Study Area (see Exhibit 4.3).

The area has experienced nearly two hundred years of development and continues to reflect a largely agricultural pattern of land occupation and ownership. Other cultural landscape areas include those reflecting characteristics of clustered communities, residential groupings of modern origin, highway and airport transportation systems, and resource extraction activities. The characteristics which lend each area its own "personality" include the nature of physical features, original survey patterns, local road network, historical and contemporary land uses, and social and functional communities.

Well over two hundred built environment features (individual buildings, groupings, or areal sites) have been identified within the study area by the investigation as having some degree of heritage interest (historic, architectural, or aesthetic). Only one site has been designated under the Ontario Heritage Act, although many others exist with notable characteristics. Built environment features have been grouped into those with exceptional, moderate, ordinary and minimal qualities. Additionally, the community of Mount Hope has been identified as a cohesive grouping. The study area is rich in features related to the agricultural development of the area. In large measure, these are located within the pattern of farm lots laid out by the original surveys.

iii) Significance and Sensitivity

Of the cultural landscape areas, two have been identified as being especially susceptible to disruption. These constitute the historic community of Mount Hope, and the triangle comprising Concession VIII, Ancaster. Additionally, the boundary between two areas, created by the ridge/escarpment along the north side of Book Road, is also very sensitive to disruption. Mount Hope represents a cohesive historical community. The latter two areas are most notable because of their aesthetic qualities (though historic built environment features add to the ridge/escarpment's sensitivity). The significance of these cultural landscape areas has been determined by the Study to be only local in extent, based on their identification in comparison with other landscape areas in the Study Area.

By their nature, many individual built environment features have tangible qualities which may be susceptible to disruption. Generally, features of exceptional and moderate qualities are the most sensitive to impacts. The exact nature of the effect of any proposed alternative must be considered on a feature by feature basis.

iv) Identified Environmentally Significant Areas

The heritage resources at Book Road were an important component in identifying this area as Environmentally Significant for the purpose of this Study. Individual features or other cultural landscape areas were not regarded as being Environmentally Significant Areas, and historical resources were not considered to be an Environmentally Significant Issue for the purposes of this Study.

4.3.4.2 Archaeological

i) Data Sources, Reliability and Gaps

A review of the Ministry of Citizenship and Culture's archaeological data bank was undertaken for the Study Area and immediately surrounding areas. This revealed that no complete archaeological surveys have been undertaken in the Study Area. Forty-seven known pre-historic sites were identified, located generally in the northern and southern extremities of the study area or immediately adjacent to it.

Two reports of archaeological investigations carried out in conjunction with the Hamilton Civic Airport expansion were reviewed. These were: "An Archaeological Survey and an Assessment of the Hamilton Civic Airport, Mount Hope, Ontario" (Wm. C. Noble, McMaster University, 1983), and "Archaeological Survey - Hamilton Civic Airport Access Roads Study" (G. Foster, Archaeological Investigations, 1983). Neither the data bank nor these reports identified archaeological resources along the recommended alignment, although a Neutral Indian village site was identified on Alternative C (west of the Airport). As well, a site of unknown nature was identified by MCC staff as being in the vicinity of Unity Road on the recommended alignment.

To supplement this, field investigations were conducted by MTC's licensed archaeologist along the recommended alignment. This was done in order to locate sites and conduct surface collection of any material of archaeological interest.

These field investigations were conducted on approximately half the recommended alignment. The remainder was not investigated due to poor ground visibility or failure to obtain access from owners or occupants.

The investigations undertaken to date allow for identification of sites but not their significance.

ii) General Description of Archaeological Resources

A review of available literature reveals that both archaic and Neutral Indian sites were present within the Study Area. Several archaic cultures are represented along the Welland River in the region.

High concentrations of aboriginal peoples were present in the area during the 17th Century. The Neutral component has been identified by the presence of village and scattered cabin sites.

During historic times extensive European based agricultural development occurred. Evidence of this occupation has been identified in several sites.

Field investigations undertaken for this study have identified an additional 50 sites.

iii) Significance and Sensitivity

Normal MTC practice for archaeological investigations for new routes involves the survey of only the selected alternative. This is done on the basis that the complete survey of all alternatives is not practically warranted and that, where resources of significance are located along the selected alternative, appropriate mitigation will be applied as determined in consultation with the Ministry's archaeologist(s). As such, the significance of archaeological resources cannot be applied to the route selection process, except in a general fashion based on accumulated literature and other documentary information.

This process has been followed in this Study and most of the selected alternative has been investigated. To date the significance of these resources has not yet been determined. The identification of significant resources as the project progresses will be incorporated into the design process for the Study and appropriate mitigation will be applied.

Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



- Study Area Boundary
- Gas
- Hydro
- Inter Provincial Pipe Line-60' Easement
- Proposed and Existing Trans Canada Pipe Line
- Built - Environmental Features of Exceptional and Moderate Importance
- Built - Environmental Features (Designated Under the Ontario Heritage Act)

- Highway 6 New Designated Section (In Place 1975)
- Areas of Heritage Sensitivity (historic, aesthetic)
- On-Site Noise Measurement Locations (1985) (See Appendix H)
- Draft Approved Subdivisions (Within 600m of Any Alternative Alignment)
- A Approval 1976-1986
- B Approval 1987

Exhibit 4.3

Utilities, Noise and
Heritage Resources



The Route Planning and Preliminary Design Study has proceeded on the basis that any resources identified will be sensitive to disturbance or disruption. However, this sensitivity is regarded as being applicable to all sites equally until otherwise determined by completion of the initial surveys and further investigations as required.

Chapter 6 outlines commitments for future work for this factor.

iv) Identified Environmentally Significant Areas/Issues

Archaeology is not considered to be an Environmentally Significant Issue for the purposes of this Study. This consideration is based on the general practice of not introducing detailed archaeological information into the decision-making process until later in the preliminary design, and on the basis that acceptable mitigation is normally applied to minimize the degree of impacts to any significant resources.

4.3.5 Noise

i) Data Sources, Reliability and Data Gaps

Investigations

The evaluation of noise for this Study has been undertaken on the basis of significant impacts as a result of condition changes to (future) ambient conditions expected to occur because of the operation of the ultimate Highway 6 (New) facility.

The investigations undertaken for this Study included:

- i) on-site noise measurements conducted in 1985 for eight representative (rural) locations within the project's Study Area (see discussion below, Exhibit 4.3 and Appendix H);
- ii) route planning level of detail predictions of future noise conditions based on anticipated traffic volumes;
- iii) preliminary design level of detail predictions for future noise conditions with the recommended alignment, including consideration and evaluation of mitigation measures, based on anticipated traffic volumes.

The investigation of noise impacts was carried out by S.S. Wilson and Associates during 1985-86. Part I, Appendix H contains two reports produced by this firm:

"Report W86-204, No. 1" (March 1986)

- contains information concerning route planning level of detail conditions: traffic volumes, numbers of lanes, truck percentages, posted speeds, and distances from both centrelines and edges of pavement for 5 dBA contour intervals.

"Report W86-204, No. 2, incorporating Revisions 1 (September 1986) and 2 (October 1986)

- contains on-site noise level measurements (April 30 to May 16, 1985);
- preliminary design level of information for the evaluation of recommended alignment impacts;
- preliminary design level of information for the investigation of mitigating measures.

As well, supplementary interpretation and analysis by the MTC Central Region Environmental Unit was done. This is included in the report "Route Planning Noise Evaluation" in Appendix H.

Procedures Followed

During the course of the Study, a number of changes occurred as a result of policy commitments agreed to between the Ministry of the Environment and MTC. These commitments took the form of a protocol signed in February 1986.

Although the route location and early preliminary design phase decisions had been completed by the time of the adoption of this protocol, noise impacts were re-evaluated in a format compatible with the agreement. The results were compared with earlier findings to determine whether the new analysis produced significantly different results. The results were not determined to be substantially different by the Study Team, but were used as a basis for additional preliminary design level of detail considerations. As a result, the body of this report (Sections 4, 5 and 6, and Appendix H) has been finalized to show the consideration of noise in terms of protocol commitments.

When the noise investigations were begun for this study, no accepted criteria existed which covered rural freeway situations in the province. Based on criteria for urban freeways, and on previous investigations undertaken by MTC, the investigation of noise impacts was done by comparing the changes in numbers of residential noise receivers receiving:

- i) between 50 and 55 dBA (Leq 24), and
- ii) over 55 dBA,

with a given Highway 6 (New) alternative alignment in place. (A discussion of dates and traffic volumes used for both pre-protocol and post-protocol investigations is provided below.)

For route planning purposes, the numbers of residences located within the areas experiencing 50 to 55 dBA, and over 55 dBA were used in presentations to External Team and municipal representatives, and to the Public, as referenced in Part I, Appendices D, E and F. The effects of terrain and screening by intervening obstructions were not taken into account for route planning level of detail investigations, except where the existence of a major cut at Unity Road was found to be important in the evaluation of the alternatives at that location.

"A Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments" was signed in February 1986, but was not received by the Study Team until May 1986, after the last series of Public Information Centres had been held. As a result, information presented at that time, and the decisions leading to it, were based on the pre-protocol investigations.

The re-assessment of noise impacts in a manner compatible with the protocol included the following considerations:

- impacts were based on noise predictions based on expected traffic volumes, ten years after completion of the facility (see discussion below);
- area investigated for noise impacts, for each alternative, was determined on the basis of the smaller of: the distance from the noise source (i.e. highway) to where no increase above the ambient noise level occurred, or 600 m from the source.

The same traffic volumes were used for both the pre-protocol and the post-protocol investigations. Post-protocol procedures are outlined in Appendix H.

Data Used

The protocol indicates that noise impacts for all MTC provincial roads are to be predicted, based on traffic projections ten years after completion (of the undertaking), or on the best available data where ten-years-after predictions are not available. The commencement of construction (and thus the estimation of a completion date) cannot be determined until after approval for Highway 6 (New) has been received under the Environmental Assessment Act. The actual construction schedule for a highway of this type is not normally determined in the preliminary design phase of investigations.

As a result, this Study has based noise level calculations on future anticipated traffic volumes, which have been determined by the use of a comprehensive model as outlined in Part II, Section 2. Included in the assumptions of this model is the growth of existing and proposed developments in the Study Area to a mature state, under a "high growth" scenario. As they are growth dependent, these predictions are independent of an actual date of construction, and are representative of a period at least ten years after construction of the ultimate undertaking. Appendix H, Part I, provides additional information on the future traffic volume predictions used.

Traffic predictions used for this Study are based on average annual daily traffic (AADT) rather than on summer annual daily traffic (SADT) values, as Highway 6 (New) is not expected to experience major seasonal fluctuations in traffic volumes.

The evaluation of noise level increases reflects the difference between predicted road-generated noise levels for future conditions with and without Highway 6 (New) in place. In some cases, however, low traffic volumes along local roads result in unrealistically low noise level predictions at receiver locations. In cases where the predicted noise levels were less than 45 dBA, this study has used an assumed minimum ambient value of 45 dBA to account for non-roadway noise contributors to rural ambient levels (such as wind, leaf rustle, agricultural activities, etc.). In these cases, the amounts of increase in noise levels are based on 45 dBA rather than on the lower traffic-generated noise predictions.

The assumption of 45 dBA has been used in several previous MTC Environmental Assessments for similar situations. In this case, the on-site noise measurements for (existing) conditions confirm the validity of this assumption.

On-site measurements at eight locations throughout the Study Area were made at 15 m from the edge of pavement. This was considered representative of conditions expected throughout the rural portions of the Study Area. In the case of higher traffic volume roads (e.g. White Church and Carluke Roads, with 1986 AADT of 1060) traffic-generated noise can be seen to contribute substantially to measured levels at this distance, and would be reduced at greater distances from the edge of pavement, to where rural background ambient (i.e. non-traffic noise) levels were experienced. Along less travelled roads (e.g. Book Road AADT of 450 and Townline Road AADT of 275 to 350), traffic contributions to the ambient noise levels can be seen, in average daytime (07:00 to 23:00) measurements of over 50 dBA. At night (23:00 to 07:00) very low traffic volumes are experienced and the measurements would consist largely of nighttime background ambient. This is reflected in the fact that, although some hourly measurements are below 45 dBA, the nighttime average is 45 dBA or more. As road-generated noise is not a substantial component in such cases, the "drop-off" in road-generated noise levels over distance does not come into play on an Leq24 basis and the background rural ambient is closely reflected in the measurements.

The assumed background rural ambient of 45 dBA has been used in the evaluation of noise impacts in future conditions. Increases in the rural ambient over time, due to such changes as increased residential development or more highly mechanized agricultural practices, has not been included. As such, the use of 45 dBA is considered to be an appropriate assumption for future conditions.

The Ministry of Transportation and Communications holds the position that noise from aircraft near airports should be included in the assessment of ambient conditions, as this noise is a component of ambient (per definition of ambient, draft National Environmental Noise Code). The assessment of noise resulting from the operation of the Hamilton Civic Airport within the Study Area (as reflected by NEF contour mapping) has been removed from the analysis of noise conditions at the request of the Ministry of the Environment. The noise reports referenced above have been revised appropriately to reflect this removal.

{{}} General Description

The Study Area is largely rural and agricultural in nature. In the communities of Ancaster, Hamilton and Mount Hope, residential clustering occurs in subdivisions. Elsewhere, individual residences are scattered on farm lots or along local roads and highways, singly or in "strips". No hospitals or other municipally-recognized quiet areas were identified within 600 m of any alternative. None of the industrial or commercial developments located within this distance are identified as major noise contributors. The operation of the Hamilton Civic Airport has been identified as a potential contributor but the airport is not used to capacity at the present time.

At the time of the noise investigations, the only draft approved subdivisions close to any alternative alignments were located adjacent to Highway 403 near Southcote Road, over 350 m east of the designation laid down to protect for a connection between Highway 403 and Highway 6 (New) in 1975. These draft approved subdivisions received approval after this designation was laid down and are currently on the MTC noise barrier retrofit programme for Highway 403. As the ramps connecting Highway 6 (New) to and from the east merge with Highway 403 in this area, Highway 403 will remain the major noise generator, and mitigation will be provided under the provisions of the retrofit programme.

Following the noise investigations, draft approval was obtained in 1987 for a subdivision immediately west of the designation. The noise analysis undertaken by Valcotics Canada Ltd. for the proposed subdivision indicated that the alignment of Highway 6 (New) will be acoustically insignificant. A condition of approval included that noise attenuation along Highway 403 should be provided at the developer's cost. This would include any attenuation associated with the Highway 403/Highway 6 (New) ramps in this location. As such, no re-evaluation of noise impacts was made to take the draft approved subdivision into account for this Study.

Low traffic volumes on most local roads contribute to low ambient noise levels. The Study Area is generally perceived as being very quiet. On-site measurements made in 1985 for eight representative rural sites at 15 m from adjacent roadways to represent the typical setback of residences within the Study Area and noise level predictions based on traffic volumes support this perception (see Appendix H).

Sources of highway noise in the Study Area include existing Highway 6, Highway 53, and Highway 403, with the latter, as a divided freeway, being the largest noise generator of the three.

Future ambient conditions, as reflected by the ten years after construction scenario predictions in most areas are not expected to change significantly from existing noise levels. Local roads will experience only small increases in traffic and the area will continue to remain largely rural and agricultural in nature. Local ambient noise levels will remain low, with the exception of areas immediately adjacent to the highways. These areas will continue to experience localized increases in traffic-generated noise.

Future usage of the Hamilton Civic Airport is uncertain at the present time, although Transport Canada has produced NEF contour mapping outlining anticipated future noise levels for areas adjacent to the airport. Consideration of noise resulting from the operation of the airport has been removed from this assessment at the request of the Ministry of the Environment.

iii) Significance and Sensitivity

In compliance with the protocol between MOE and MTC, noise impacts have been regarded as significant for this Study where an increase of more than 5 dBA has been predicted for noise sensitive receivers over the (future) ambient condition without Highway 6 (New), as a result of the operation of the facility ten years after construction. Where such a significant impact occurs, investigation of mitigation within the right-of-way is required by the protocol. The protocol recognizes an objective for outdoor sound levels to be the higher of 55 dBA or the existing ambient.

For information purposes, it is noted that the Ministry of the Environment assesses noise impacts that have an increase of greater than 5 dBA as "definite" and those with an increase of greater than 10 dBA as "significant". These terms are not so defined in the MOE/MTC protocol and have not been used in this assessment.

Noise sensitive locations include residential receivers (calculated for a known or assumed outdoor amenity area, usually behind a residence), within the distances from the noise source outlined in the protocol. For the purposes of this Study, schools located within 600 m of an alternative alignment where their outdoor area would receive an increase as a result of an alternative were included. Only Seneca Unity School on Unity Road was applicable. No hospitals or other municipally-recognized noise sensitive areas were identified within 600 m of any alternative.

In general, noise sensitive locations (receivers) occur on local roads adjacent to alternative alignments where residences would be in close proximity to the alternative.

iv) Identified Environmentally Significant Areas/Issues

Highway noise associated with the proposed undertaking is identified as an Environmentally Significant Issue for the purposes of this Study.

4.3.6 Major Utilities

Major utilities within the Study Area are shown on Exhibit 4.3. Table 4.3 summarizes the status and ownership of these utilities. This information was obtained from correspondence with the relevant utility companies and municipal officials and indicate existing plant and any planned expansion. Relocations or modifications to utilities will be dealt with in detailed design.

As part of the information-gathering process, a detailed inventory of existing utility plants was completed. The purpose of this information was twofold:

1. To identify those major utilities for which relocation costs were prohibitive to the point where they affect evaluation of alternative alignments.
2. To provide base data and a list of contacts for all utilities within the project area for reference during subsequent project phases.

Because of the rural nature of the Study Area, there is not an extensive network of utility plants. No future expansion of utility plants was identified, except as noted below.

Ontario Hydro

There are three major Hydro lines within the Study Area. A 230 kV line runs east-west between White Church and Chippewa Roads. A 230 kV line runs approximately north-south from Book Road to south of Butter Road. There are three 230 kV lines running east-west between Highway 53 and Book Road.

TABLE 4.3
SUMMARY OF EXISTING AND FUTURE UTILITY PLANT

| UTILITY | AFFECTED PLANT WITHIN STUDY AREA | FUTURE EXPANSION/ACTION |
|--|---|--|
| Bell Canada 66 Bay Street South Hamilton, Ontario | No major Bell Canada facilities affected. Minor adjustments to buried distribution cables may be required. | No major expansion planned. Relocation requirements can be dealt with in detail design. |
| Ontario Hydro 700 University Avenue Toronto, Ontario | 230 KV line running East-West between White Church and Chippewa Roads. 230 KV line running approximately North-South from Book Road to south of Butter Road. Three 230 KV lines running East-West between Highway 53 and Book Road. 115 KV line runs through Northeast corner of Study Area. | Relocation requirements can be dealt with in detail design. Crossing Hydro line by Alternatives A2 and A3 immediately south of Book Road may not be feasible. Crossing at Butter Road can be dealt with in detail design. Relocation requirements can be dealt with in detail design. No effect on alternative alignment. |
| Inter-Provincial Pipeline 10201 Jasper Avenue Edmonton, Alberta | Pipeline right-of-way runs East-West between Airport Road and White Church Road. | National Energy Board approval required for crossing. |
| TransCanada Pipelines 50 Commerce Court West Toronto, Ontario | Pipeline runs through Northeast corner of Study Area. | No effect on alternative alignments. Proposed pipeline for construction in 1987 will run East-West between Book Road and Highway 53 on south limit of Hydro right-of-way. |
| Union Gas 50 Keil Drive North Chatham, Ontario | Pipeline runs Northwesterly from the intersection of Unity Road at Highway 6 to Butter Road, where it leaves the Study Area. An intermediate pressure line runs along Unity Road from Highway 6 to Mines Road. | No plans for any future expansion. |
| Regional Municipality of Hamilton-Wentworth 71 Main Street West Hamilton, Ontario | Limited local service of water and sewer mains. | Relocation requirements can be dealt with in final design. |

The crossing of the Ontario Hydro line immediately south of Book Road is not feasible. This facility was recently lowered to accommodate the zoning requirements for the recently expanded Hamilton Civic Airport. All other crossings were judged to be feasible and relocation requirements can be dealt with in the final design.

A 115 kV line runs through the northeast corner of the Study Area and does not effect any of the alternative alignments.

Bell Canada

Bell Canada has no major facilities that would be affected by any of the alternative alignments for Highway 6 (New). Bell plans no major expansions within the Study Area. Some minor adjustments may be required for buried distribution cables. These adjustments can be dealt with during final design.

Interprovincial Pipelines

An Interprovincial Pipeline right-of-way runs approximately east-west between Airport Road and White Church Road. National Energy Board approval will be required for any crossings.

TransCanada Pipelines

An existing pipeline runs through the north-east corner of the Study Area and does not affect any of the alternative alignments. TransCanada Pipelines is proposing a new line which will run east-west between Highway 53 and Book Road along the south limit of the Hydro right-of-way.

Union Gas

There is a high pressure gas pipeline running northwesterly from the intersection of Unity Road and Highway 6 to Butter Road where it leaves the Study Area.

There is also an intermediate pressure line which runs along Unity Road from Highway 6 to Greens Road.

Municipal Services

Due to the rural nature of the Study Area, municipal services exist in only a few locations. These consist of:

1. developed areas of the Town of Ancaster, north of Highway 53;
2. the portion of the City of Hamilton within the Study Area; and
3. the Highway 6 Corridor to Mount Hope.

The majority of this service is local in nature, and any relocations can be dealt with during final design.

4.4 Summary of Environmentally Significant Areas/Issues

For the purposes of this Study, the following have been identified as Environmentally Significant Areas or Issues (ESA/ESIs). The components contributing to their status as ESA/ESIs are also outlined, as are some of the contacts for technical and other information.

| ESA/ESI | Major Components | Contacts |
|---------------------|--|----------------------------------|
| Noise | - predicted (future) highway noise impacts | Ministry of the Environment |
| Agriculture | - area required for right-of-way - farms affected | Ministry of Agriculture and Food |
| "Unity Road" | - proximity impacts (noise, visual) - travel patterns - right-of-way requirements - groundwater | Various |
| "White Church Road" | - proximity impacts (noise, visual) - municipal planning requirements - travel patterns, access - right-of-way requirements - waterfowl, woodlot areas | Various |

| ESA/ESI | Major Components | Contacts |
|-------------|---|-------------------------------|
| "Book Road" | <ul style="list-style-type: none"> - proximity impacts (noise, visual) - airport navigation requirements - hydro-electric corridors - human and animal cemeteries - heritage resources - right-of-way requirements - specialty crop and other agriculture - groundwater | Various |
| Property | <ul style="list-style-type: none"> - acquisition - proximity effects | Various |
| Vegetation | <ul style="list-style-type: none"> - woodlot/forested area | Ministry of Natural Resources |

The components of these ESA/ESIs are used in Chapter 5 in the evaluation of the various alternative alignments. Chapter 6 provides a description of the relationship of the recommended alignment to the ESA/ESIs and mitigating measures or commitments to future work proposed.

4.5 Transportation Facilities

4.5.1 Provincial Highways and Municipal Roadways

Existing Highway 6 has a basic four-lane cross section north of Caledonia and a basic two-lane cross section south of Caledonia. The Caledonia Bypass is two lanes wide. The posted speed limit is 80 km/h.

The existing land use adjacent to existing Highway 6 is primarily agricultural and light industrial with some residential and commercial uses. Along the section of Highway 6 approaching Hamilton and on Upper James in Hamilton, strip commercial development predominates. All access to Highway 6 is at-grade.

General characteristics of existing Highway 6 between Hamilton and Caledonia are summarized in Table 4.4. This information was obtained from the Ministry of Transportation and Communications Provincial Road Appraisal Sheets. Existing Highway 6 carries approximately 13,500 vehicles per day (vpd) north of the airport 11,400 vpd south of the airport. The respective design hourly volumes (DHV) are 1,457 and 1,231 vehicles per hour (vph). Both sections operate at level of service "C". North of the airport there are 8.0% trucks or 1,080 trucks per day and south of the airport this increases to 9.5% but remains at 1,080 trucks per day.

TABLE 4.4
SUMMARY OF PROVINCIAL ROAD APPRAISAL SHEETS
FOR EXISTING HIGHWAY 6

| Section | Distance (km) | No. of Lanes | 1983 Traffic | | | % Comm. | Hourly Service Volumes | | | | Existing Level of Service |
|------------------|---------------|--------------|--------------|------|-------|---------|------------------------|-------|-------|-------|---------------------------|
| | | | AAOT | DHV% | DHV | | B | C | D | E | |
| Caledonia Bypass | 6.5 | 2 | 3,000* | 10.8 | 323 | 5.0 | - | 833 | 1,233 | 1,666 | A |
| South of Airport | 6.4 | 4 | 11,400 | 10.8 | 1,231 | 9.5 | 497 | 1,623 | 2,545 | 2,926 | C |
| North of Airport | 6.2 | 4 | 13,500 | 10.8 | 1,457 | 8.0 | 515 | 1,682 | 2,638 | 3,032 | C |

* Not based on a full year of counts

Traffic accident records were obtained for existing Highway 6 from the Ministry of Transportation and Communications for the years 1981 to 1983 inclusive. Accident statistics were compiled for two sections of Highway 6, south of the Airport and north of the Airport. These are shown in Table 4.5.

From the table, it is noted that the intersection or private drive related accidents form a high percentage of the total accidents, generally 30-50%. This is a reflection of the combination of relative

high speed highway, at-grade intersections, and driveways fronting on the highway. The sectional rates are consistent through the three year period and are somewhat above the provincial average. Truck involvements vary considerably and range from 3% to 18% of all accidents.

TABLE 4.5
EXISTING HIGHWAY 6 ACCIDENT SUMMARY¹

| | SECTION ³ | | | | | |
|---|----------------------|------|------|------------------|------|------|
| | South of Airport | | | North of Airport | | |
| | 1983 | 1982 | 1981 | 1983 | 1982 | 1981 |
| Number of Accidents | 35 | 26 | 36 | 31 | 30 | 22 |
| Accident Rate ² | 1.7 | 1.3 | 1.8 | 1.3 | 1.3 | 0.9 |
| % Trucks Involved | 11 | 8 | 5 | 3 | 17 | 18 |
| % Intersection or private drive related | 40 | 31 | 28 | 45 | 30 | 50 |
| % Intersection or private drive related (trucks involved) | 6 | 8 | 3 | 0 | 10 | 14 |

NOTES:

1. Source: Ministry of Transportation and Communications
2. Accident rate expressed in number of accidents per million vehicle kilometres. Provincial Average for the year 1981 to 1983 is 1.1 accidents per million vehicle kilometres for King's Highways.
3. Data is not yet available for the Caledonia Bypass.

Highway 6 (New) will ultimately be constructed as a divided, fully controlled access freeway. Freeways are statistically the safest type of highway, with accident rates averaging approximately 0.8 accidents/million vehicle kilometres (Mvkm). During the preliminary design of Highway 6 (New), standards reflecting a 120 km/h design speed were used for all geometric criteria (see Part II). Therefore, relative to existing Highway 6 (accident rate: 1.6/Mvkm), it can be anticipated

that significant improvements in the accident rate will accompany construction of the ultimate freeway.

A major consideration in the determination of the initial stage cross section was the accident experience of at-grade intersections (see Section 3.6, Part II). Sight distances and grades were carefully examined in the design of the at-grade intersections (see Section 5, Part II).

Table 4.6 summarizes the existing conditions of the Provincial highways and municipal roadways in the Study Area. There are no planned expansions for these roadways.

The information was obtained from:

- meetings with representatives of MTC;
- meetings with appropriate municipal officials;
- review of relevant plans and reports.

The major problems identified are the lack of direct access to the Provincial freeway system and operational problems on the Caledonia Bypass.

Existing Highway 6 does not connect to Highway 403 and thus long distance traffic, particularly truck traffic, must use local roads to access Highway 403. Local residents have expressed concern over the use of these local municipal roads for long distance travel and truck traffic. These concerns were also expressed by municipal staff and politicians.

The lack of direct access to the Provincial freeway system was also cited by many of the representative truckers and industries interviewed in the Highway 6 Corridor. In addition, the trucking firms and industries also identified operational problems related to congestion through both Jarvis and Hagersville.

Operational problems on the Caledonia Bypass have been cited by trucking companies, local industries and municipal staff. In order to use the Bypass additional turns and increased travel distance are required. This has led to some users, primarily truckers, to stay on existing Highway 6 through Caledonia.

In addition to the roads within the Study Area, the following are proposed:

TABLE 4.6
SUMMARY OF EXISTING ROADS WITHIN STUDY AREA

| Roadway | Jurisdiction | Existing Conditions |
|----------------------------------|--|--|
| Highway 403 | Province | Four basic lane freeway with one extra lane on escarpment. Right-of-way width 91 m. |
| Highway 53 | Province* | Two-lane paved highway. R-O-W 26 m. |
| Highway 6 | Province* | Four-lane paved highway. R-O-W 37 m. |
| Glancaester Road R.R. 253 | Regional Municipality of Hamilton-Wentworth | Two-lane paved roadway. Boundary road between Town of Ancaster and Township of Glanbrook. Section of road closed due to Airport Expansion. |
| Airport Road R.R. 637 | Regional Municipality of Hamilton-Wentworth | Two-lane paved roadway. Provides access to Hamilton Civic Airport. |
| White Church Road R.R. 622 | Regional Municipality of Hamilton-Wentworth | Two-lane paved roadway. |
| Fiddler's Green Road R.R. 216 | Regional Municipality of Hamilton-Wentworth | Two-lane paved roadway. |
| Southcote Road R.R. 248 | Regional Municipality of Hamilton-Wentworth north of Highway 53 Town of Ancaster south of Highway 53 | Two-lane paved roadway. (Section closed due to Airport expansion.) |
| Smith Road | Town of Ancaster | Two-lane gravel roadway. (Section closed due to Airport expansion.) |
| Book Road | Town of Ancaster | Two-lane gravel roadway. |
| Butter Road | Town of Ancaster | Two-lane roadway realigned to connect with Airport Road. |
| Chippewa Road | Township of Glanbrook | Two-lane gravel roadway. |
| Leeming Road | Township of Glanbrook | Two-lane gravel roadway. |
| Dickenson Road | Township of Glanbrook west of Highway 6 | Two-lane paved roadway. |
| Twenty Road | Township of Glanbrook | Two-lane paved roadway. |
| Townline Road | Boundary Road Town of Haldimand/Township of Glanbrook | Two-lane gravel roadway. |
| Unity Road | Town of Haldimand | Two-lane paved roadway. |
| Greens Road | Town of Haldimand | Two-lane paved roadway. |
| Mines Road | Town Haldimand | Two-lane paved roadway. |

* Negotiations are underway to transfer portions of these highways to the appropriate Regional Municipality.

- the North/South Parkway and East/West Arterial, approved recently for design and construction;
- Highway 403, Ancaster to Brantford, presently programmed for construction;
- the Hamilton Perimeter Industrial Road, feasibility study ongoing.

4.5.2 Transit System

There is little existing transit service within the Study Area. The Hamilton Street Railway runs some routes in the portion of the City of Hamilton within the Study Area. No service exists beyond the Mountain Terminal on Upper James, between Dickenson and Twenty Roads.

Canada Coachlines operates a bus service along existing Highway 6 between Hamilton and Port Dover with stops in Mount Hope and Caledonia. Between Hamilton and Caledonia there are four runs daily, Monday to Thursday, and on Saturday. On Friday there are five runs daily, and on Sunday there are two runs daily.

United Trails Buslines also operates a bus service along Highway 6 between Caledonia and Hamilton. There is no stop in Mount Hope. This service runs twice daily.

No changes were identified to the existing transit system.

5. Identification and Evaluation of Alternatives

5.1 Introduction

This Chapter describes the identification and evaluation of alternatives for Highway 6 (New).

Chapter 2 of this report developed the transportation objectives for Highway 6 (New). Throughout the evaluation of alternatives, these objectives were used as a basis for assessing the alternatives to the undertaking, determining the Study corridor, and determining viable alternative alignments.

Section 5.3 discusses alternatives to the undertaking.

In Section 5.4 corridor alternatives are discussed.

Section 5.5 describes the alternative alignments.

Section 5.6 discusses alternative alignments rejected after a preliminary analysis.

Section 5.7 describes the viable alternative alignments.

In Section 5.8 the factors and criteria used in the comparative analysis are developed.

The comparative evaluation is presented in Section 5.9.

Section 5.10 outlines modifications to the Recommended Alignment, the result of which is the ultimate undertaking.

5.2 Design Criteria

Alignments for Highway 6 (New) were designed in accordance with Ministry of Transportation and Communications Standards for Rural Divided Freeways to a design speed of 120 km/h (RFD 120).

5.3 Alternatives to the Undertaking

In this section reasonable alternatives to the undertaking are compared to the transportation objectives of Highway 6 (New) as outlined in Section 2.3.

The objectives used in assessing the alternatives to the undertaking are:

1. Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
2. Increase use of the Caledonia Bypass.
3. Improve access to provide flexibility for development in Townsend/Nanticoke.
4. Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.

5.3.1 Modal Alternatives

Transit

Access to the newly expanded Hamilton Civic Airport could not be provided adequately by transit as users of the airport have many dispersed origins and can travel considerable distances. Therefore, automobile access to the airport is of particular importance. Currently there is no existing public transit service to the airport due to low demand. Taxi and limousine service is available for those unable to arrive by personal automobile.

Transit would not increase use of the Caledonia Bypass. In addition, transit would not improve access to either the Townsend/Nanticoke area or the industrial area of east Hamilton, as both these areas require improved automobile and predominantly truck access.

Rail

Improved access to Townsend/Nanticoke and the industrial area of east Hamilton requires a roadway link rather than a rail link. Both industrial areas are currently well served by rail transportation.

Additional rail service would not improve access to the Hamilton Airport or increase use of the Caledonia Bypass. In addition, as noted

in Section 2.2.2, current industry inventory procedures place more emphasis on truck rather than rail service.

Air

Very good air access is currently provided by the recently expanded Hamilton Civic Airport. Improvements to air service in the area would not increase access to the Townsend/Nanticoke area, increase use of the Caledonia Bypass, or improve access to the industrial area of east Hamilton.

5.3.2 Operational Improvements/Upgrading of Existing Facilities

The only major north/south transportation facility within the Study Area is existing Highway 6. Upgrading of existing Highway 6 would not improve access to the Hamilton Civic Airport as direct access is required to the Provincial Freeway System. Access today is only available via municipal roads, and local residents object to the use of such roadways as major transportation corridors.

To improve access to both the Townsend/Nanticoke area and the industrial area of east Hamilton, a major highway facility with direct connections to the existing Provincial freeway system is required. Interviews held with representative industries and trucking firms in the Highway 6 Corridor, as detailed in Section 2.2.2, indicate that there is very poor access from Nanticoke to the Provincial freeway system.

The interviews also revealed that the industries in the Nanticoke area require use of the largest and heaviest trucks allowed by law. These trucks have considerable impact on urban areas and are best carried by a freeway facility.

Thus, upgrading of existing Highway 6 would not provide for a direct connection to the Provincial freeway system and would rely on the use of municipal roadways to accommodate large volumes of heavy trucks in congested urban areas.

An upgrading of existing Highway 6 would do little to increase the use of the Caledonia Bypass. Currently, operational problems exist at the north end of the Caledonia Bypass that can only be relieved by eliminating the existing connection to existing Highway 6.

5.3.3 "Do Nothing"

The "Do Nothing" option would place total reliance upon existing Highway 6 as the major transportation facility within the Study Area. Although it generally offers a good level of service today, congestion will occur as growth continues, particularly within the urban area of Hamilton (see Section 2.3).

As noted in the preceding section, existing Highway 6 does not have a direct connection to the existing Provincial freeway system and requires that truck traffic be accommodated on municipal roadways. Thus, as with "Upgrading of Existing Facilities" a "Do Nothing" option would not improve access to the Hamilton Civic Airport, improve access to the Townsend/ Nanticoke area, increase use of the Caledonia Bypass or improve access to the industrial area of east Hamilton.

5.3.4 Summary

Table 5.1 summarizes the comparison of the Alternatives to the Undertaking. This shows that none of the Modal Alternatives, Upgrading of Existing Facilities or the Do Nothing option meets the objectives of Highway 6 (New) and therefore they are not considered further.

5.4 Corridor Alternatives

(Alternative Methods of Carrying Out the Undertaking)

5.4.1 Background

During earlier studies for Highway 6 (New) between Caledonia and Hamilton (including the 1976 Highway 6 Nanticoke to Hamilton Joint Use Corridor Study), three basic corridors were identified as areas for potential alignments between Caledonia and Hamilton (see Exhibit 2.1). These corridors were:

- the "West Corridor" connecting to existing Highway 403 in Ancaster;
- the "Central Corridor" generally located immediately east of existing Highway 6 and connecting to the proposed mountain expressway in Hamilton-Wentworth; and
- the "East Corridor" generally east of the CNR tracks and connecting to the proposed North-South Parkway.

Various alternative alignments are available within each of these corridors.

As part of this study corridor traffic forecasts were developed for the East, Central and West Corridors (see Section 2.3, Part I and Section 2, Part II). Table 5.2 shows the future forecasts for each corridor.

The highest volumes are forecasted for the Central Corridor, followed by the West with the East Corridor having the lowest volumes, reaching a high of 23,500 vpd, north of the Airport, under the "high" growth scenario.

Both the Central and East Corridors have higher volumes north of the Airport than to the south. The West Corridor, however, has the lower volume north of the Airport. Immediately south of the Airport, traffic destined to the Hamilton Mountain area and most of lower Hamilton switches to Old Highway 6. Traffic remaining on Highway 6 (New) north of the Airport is travelling to Brantford and areas west of Hamilton, Ancaster, Dundas and long distance trips to Burlington and beyond.

5.4.2 Process for Determining the Study Area

In order to identify the Study Area for the Caledonia to Hamilton study, it was decided to analyze the above three corridors in terms of their ability to meet the transportation objectives of the Highway, outlined in Section 2.3 and reiterated in Section 5.3 of this report.

If any of the three basic corridors did not meet the required objectives of the new facility, then they would be considered to be unacceptable alternatives and would be abandoned without any further study.

5.4.3 Comparison of Corridors with Objectives

Exhibit 5.1 provides a comparison of the three basic corridors with the stated transportation objectives.


Based on this analysis, it was concluded that the East and Central corridors do not meet the required transportation objectives; and consequently, the Central and East corridors were not studied further. The Study Area is thus defined around the West corridor.

TABLE 5.1
COMPARISON OF TRANSPORTATION OBJECTIVES TO ALTERNATIVES TO THE UNDERTAKING

| ALTERNATIVES TO THE UNDERTAKING | 1 | 2 | 3 | 4 | COMMENTS |
|--|---|---------------------------------------|--|---|--|
| | Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself. | Increase use of the Caledonia Bypass. | Improve access to and provide flexibility for development in Townsend/Manticoke. | Improve access to the industrial area of Lower Hamilton, such access currently provided by the local road system. | |
| TRANSIT | Cannot serve dispersed trip origins of air travellers. | Does not increase use of the Bypass. | Would not improve auto and truck access. | Would not improve auto and truck access. | Improved auto and truck access not provided for by transit. |
| RAIL | Cannot serve dispersed trip origins of air travellers. | Does not increase use of the Bypass. | Good rail service already exists. | Good rail service already exists. | Improved auto and truck access not provided for by rail. |
| AIR | Good air facilities already exists. | Does not increase use of the Bypass. | Would not improve auto and truck access. | Would not improve auto and truck access. | Improved auto and truck access not provided for by air. |
| UPGRADING OF EXISTING FACILITIES | Does not improve access. | Does not increase use of the Bypass. | Does not improve access. | Does not improve access. | Upgrading would not provide for a connection to Highway 403. |
| "DO NOTHING" | Does not improve access. | Does not increase use of the Bypass. | Does not improve access. | Does not improve access. | No connection to Highway 403 would be provided. |

| Study Objective | Provide access from the airport to the existing provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself | | Increase use of the Caledonia By-Pass | Improve access and provide flexibility for development in Townsend / Nanticoke | Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system | Select a route which can be stage-constructed in a realistic and economical manner | | |
|------------------|--|---|--|--|--|--|--|---|
| West Corridor | Provides a direct connection from the airport to the provincial freeway system | Provides the best access from the airport to areas west of Hamilton | All corridors the same in the long run | Provides good access to Townsend / Nanticoke to the provincial freeway system | Good access to the industrial area of lower Hamilton (assuming the Hamilton Perimeter Industrial Road is in) | Can be staged independently of the N-S/E-W | Can be staged to provide a direct connection to Highway 403 from the airport | Can be staged to improve use of the Caledonia By-Pass |
| Central Corridor | Does not provide a direct connection from the airport to the provincial freeway system (assuming the N-S/E-W is in) | Duplicates service provided by existing Highway 6 for access to / from Hamilton | All corridors the same in the long run | Duplicates service provided by existing Highway 6 No connection to the provincial freeway system | Duplicates service provided by existing Highway 6 | Staging depends on the N-S/E-W | Stage to serve the airport will duplicate service provided by existing Highway 6 | Can be staged to improve use of the Caledonia By-Pass |
| East Corridor | Does not provide a direct connection from the airport to the provincial freeway system (assuming the N-S/E-W is in) | Duplicates service provided by existing Highway 6 for access to / from Hamilton | All corridors the same in the long run | Duplicates service provided by existing Highway 6 (assuming the N-S / E-W is in) No connection to the provincial freeway system | Very good access to the industrial area of lower Hamilton (assuming the N-S is in) | Staging depends on the N-S/E-W | Cannot be staged to service the airport | Can be staged to improve use of the Caledonia By-Pass |

Legend:

-  Denotes key factors in selecting the west corridor
- N-S/E-W Stands for the Region's proposed North-South Parkway and East-West Arterial

Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

Exhibit 5.1

Comparison of Corridors to Study Objectives

TABLE 5.2
CORRIDOR TRAFFIC PROJECTIONS

| Scenarios | Forecasted Year 2001 AADT | | |
|---------------------|---------------------------|---------|--------|
| | West | Central | East |
| Anticipated: | | | |
| North of Airport | 7,000 | 17,700 | 8,700 |
| South of Airport | 9,900 | 12,200 | 5,700 |
| High: | | | |
| North of Airport | 9,000 | 23,500 | 10,700 |
| South of Airport | 13,900 | 16,400 | 7,700 |

The major reasons for this decision are discussed below with respect to the various objectives.

Objective 1: Provide access from the Airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself

The West Corridor provides a direct and an immediate connection to existing Highway 403. In addition (and this is related to objective 5 below), this connection to Highway 403 could be constructed at any time. Therefore, benefits in terms of Airport access would be quickly realized. The other two alternative corridors (East and Central) cannot connect to the Provincial freeway system and depend upon the proposed North-South Parkway/East-West Arterial.

The Central Corridor duplicates service provided by existing Highway 6 and thus does not improve access to the Airport.

The direct connection to the Provincial freeway system was a major factor in selecting the West Corridor for detailed study.

Objective 2: Increase use of the Caledonia Bypass

The three corridors would all increase use of the Caledonia Bypass.

Objective 3: Improve access and provide flexibility for development in Townsend/Nanticoke

Because the West Corridor connects directly to existing Highway 403, the Nanticoke/Townsend areas would benefit immediately from the improved access. The Central and East Corridors do not connect to the Provincial freeway system and also depend upon the proposed the North South Parkway/East-West Arterial routes.

Industries and truckers interviewed (see Section 2.2.2) indicated that they require a direct connection to the Provincial freeway system to avoid travel in the urban areas of Hamilton and other communities. In addition, the large, heavy trucks used by these firms are not compatible with travel on municipal roadways within an urban environment. Only the West Corridor would connect directly to Highway 403 and avoid travel on municipal roadways through urban areas.

If the Region of Hamilton-Wentworth North-South/East-West routes are constructed, a connection will be made with existing Highway 6. Existing Highway 6 south of the East-West Arterial is a four lane undivided arterial roadway with geometrics providing a comparatively high level of service. Consequently any traveller from the Nanticoke/Townsend areas with a desire to access the easterly portion of Hamilton or travel to points east of Hamilton will still be able to use existing Highway 6 and the North-South/East-West routes.

Thus, the East and Central Corridors would serve essentially the same traffic movements as Existing Highway 6 and the North-South/East-West routes and would therefore provide a duplication of service.

Objective 4: Improve access to the industrial areas of lower Hamilton

When the Region of Hamilton-Wentworth's proposed Industrial Perimeter Road is constructed (from Highway 403 easterly along the Harbour connecting to Burlington Street), the West Corridor will provide improved access from Nanticoke to the easterly industrial areas of Lower Hamilton via Highway 403 and the Industrial Perimeter Road.

In addition (reaffirming the point made in Objective 3 above), with the North-South/East-West facilities in place the Central Corridor or East Corridor would only duplicate the service that will be provided by existing Highway 6 and would require that truck traffic be carried through urban areas or municipal roadways.

Objective 5: Select a route which can be stage constructed
in a realistic and economical manner

Because the West Corridor connects to an existing provincial freeway (Highway 403), Highway 6 (New) could be constructed on the West Corridor at any time with the realization of maximum transportation benefits. This is particularly relevant to servicing the Airport and is a major factor in selecting the West corridor for detailed study.

The East and Central Corridors depend entirely on the Regional North-South/East-West facilities to provide service and meet the objectives. Consequently with the East and Central Corridors the Province would not have full control over the construction staging of Highway 6 (New).

Another consideration is that Provincial freeways are primarily intended to connect larger cities, industrial concentrations and recreational areas. They serve as the major highway routes through intensely developed areas and serve interregional travel movements. The West Corridor would provide such a connection between Highway 403 and the Townsend/Nanticoke area. However, the Central, and to a lesser extent the East, Corridors would not carry primarily interregional travel movements. Both the East and Central Corridors would simply duplicate the service and function of existing Highway 6.

In the longer term it can be anticipated that Highway 6 (New) will be a freeway facility. General MTC practice is to terminate a freeway at another freeway. The West Corridor is the only corridor of the three which would terminate at a Provincial freeway facility. The Region of Hamilton-Wentworth's North-South route, while being fully grade separated, does not meet provincial freeway standards. The East-West portion is to be built as an arterial. In addition these two routes address primarily municipal traffic needs and will not be assumed as Provincial Highways.

5.4.4 Summary

A comparison of the corridors with the stated objectives was undertaken to define an area in which alternative alignments for Highway 6 (New) would be investigated. The two main reasons for selecting the West Corridor over the East and Central Corridors are that only the West Corridor connects directly to the Provincial freeway system and only

the West Corridor can be staged independently of the proposed North-South Parkway and East-West Arterial. These factors are highlighted in Exhibit 5.1. Also, the Central and East Corridors duplicate service provided by existing Highway 6 and thus do not improve access to the Airport or to Townsend/ Nanticoke. Based on this analysis, the East or Central Corridors were not studied in any further detail.

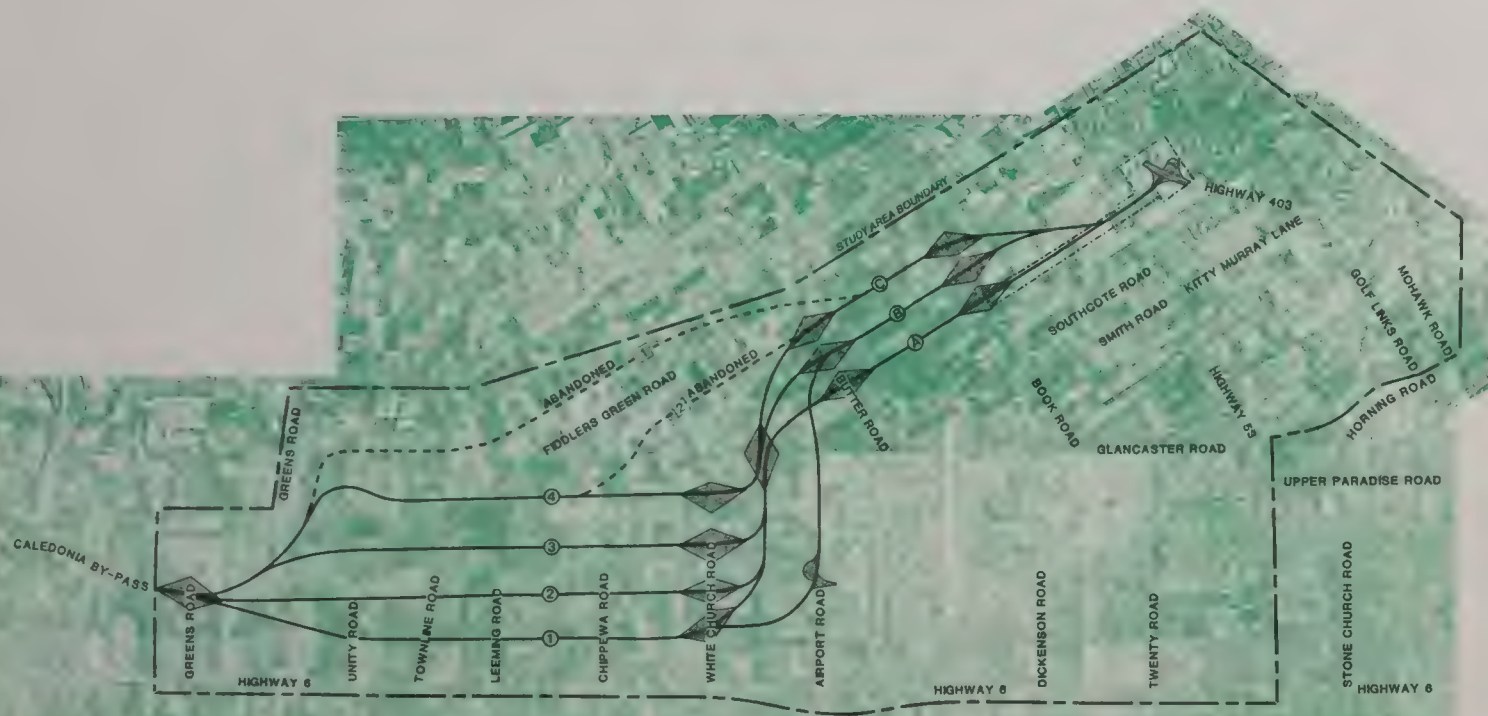
5.5 Initial Alternative Alignments

The alternative alignments for Highway 6 (New) are shown on Exhibit 5.2. These alignments were generated on the basis of technical feasibility and the avoidance of known major impacts and constraints. Principles used in their generation were as follows:

1. Lot lines were followed wherever possible to minimize farm severances.
2. Avoidance of the recently expanded Hamilton Civic Airport and related future navigational controls as required by Transport Canada.
3. Flexibility to avoid the waterfowl nesting area, the Unity Road Hamlet and the Town of Mount Hope.
4. The necessity to link the alignments at the north end to Highway 403 and at the south end to the Caledonia Bypass. It was considered desirable although not mandatory to match the previously designated Highway 6 (New) corridor between Highway 403 and Book Road.
5. Minimize direct impacts to residences.

Between Highway 53 and Glancaster Road there are three basic alternative alignments. These are labelled A, B, and C. Between Glancaster Road and the Caledonia Bypass at Greens Road, there are four basic alternative alignments, 1, 2, 3, and 4. Other sub-alternatives to the basic alternatives were also examined, these are discussed in Section 5.9.

Also shown are two abandoned alternatives. Both of these abandoned alternatives connect between Alignment C and Alignment 4. (The reasons for abandoning these two alternatives are discussed in the following section).



Highway 6 (New) **HAMILTON TO CALEDONIA** Environmental Assessment & Preliminary Design Report



- Study Area Boundary
- Alternative Alignments Studied
- Abandoned Alignments
- Potential Interchange Locations

Highway 6 New Designated Section

Exhibit 5.2

Alternative Alignments

5.6 Alternative Alignments Rejected After A Preliminary Analysis

All of the alternative alignments were compared to the study objectives, discussed in Section 2.3. On the basis of this comparison the alignments, Abandoned 1 and Abandoned 2, were dismissed from further study as they did not adequately meet all the objectives of the study.

Both of these alignments are to the west side of the Study Area and are the greatest distance from existing Highway 6. A traffic analysis conducted as part of this study identified a major traffic movement between Highway 6 (New) and existing Highway 6, south of Mount Hope. This movement consists of traffic coming from Caledonia and areas to the south in Townsend/Nanticoke wishing to travel to the Hamilton Mountain area and the central and easterly portions of lower Hamilton. This movement accounts for approximately 50% of the traffic forecasted for Highway 6 (New) south of Mount Hope.

Both of the alternative alignments abandoned were judged to be too far from existing Highway 6 to adequately serve this traffic movement. Traffic would continue to use existing Highway 6 and the objective of increasing use of the Caledonia Bypass would not be met.

In addition, both of the abandoned alternatives are the greatest distance from the Hamilton Civic Airport. Both these alternatives would provide the poorest service to the airport.

The abandoned alternatives 1 and 2 were not studied in any further detail.

5.7 Alternative Alignments

The alternatives remaining for detailed analysis consisted of Alignments 1, 2, 3, and 4 and Alignments A, B, and C as shown on Exhibit 5.2. With these alignments, interchanges were considered at:

- Highway 403;
- Book Road;
- Butter Road;
- Glancaster Road;
- White Church Road;
- Greens Road.

Not all of these interchanges are proposed for all alignments. Depending upon the alignment selected the interchange configurations vary. For example, with Alignment 4 an interchange would not be possible at both White Church and Glancaster Roads as there is insufficient distance to provide for ramps between the two roadways. However, with Alignment 1 interchanges at both White Church and Glancaster Roads would be feasible as sufficient distance exists to provide ramps between the two roadways.

The interchange at Highway 403 is proposed to provide all movements between Highway 6 (New) and Highway 403. In addition, ramps are proposed between Highway 53 and Highway 403 to serve movements to and from the east on Highway 403.

An interchange is proposed at Book Road to provide access for a future passenger terminal and associated airport related developments on the north side of the Airport. Also, from an interchange spacing point of view, a connection at Book Road is desirable to provide access and service to adjacent lands. (A separate study was undertaken of the Book Road crossing, as outlined in Section 5.9.1.)

Interchanges at Butter and Glancaster Roads are proposed to provide access to the south side of the Airport. Transport Canada's ultimate plans for the airport call for freight facilities and general aviation services along Airport Road.

The White Church interchange serves not only local traffic but also provides for a connection between Highway 6 (New) and existing Highway 6. The need for this connection was identified during the traffic analysis and is discussed in Section 5.6.

At the south end of the Study Area an interchange is proposed at Greens Road to connect to the north end of the Caledonia Bypass. This interchange would also provide access to Caledonia.

5.8 Detailed Assessment of Alternative Alignments

In this stage of the study, the various alternative alignments were analyzed and assessment tables were developed. Based on studies conducted during the last 20 years, certain principles have been employed to make the recurring trade-offs required for decision-making purposes on capital projects. These principles of level of service,

TABLE 5.3
FACTORS USED FOR THE DETAILED ASSESSMENT OF ALTERNATIVE ALIGNMENTS

| Factor | Criteria | Rationale | Significance |
|-------------|---|---|--|
| Property | <ul style="list-style-type: none"> Number of residential properties taken Number of commercial properties taken Number of industrial properties taken Number of institutional properties taken <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <ul style="list-style-type: none"> Number of properties from which land is required but which are not eliminated (by type) </div> <div style="border-left: 1px solid black; padding-left: 10px;"> <ul style="list-style-type: none"> Residential Commercial Industrial Institutional </div> </div> | <ul style="list-style-type: none"> Minimization of disruption to local residents and local business, industries and institutions | <ul style="list-style-type: none"> Effects to property, both direct takings and proximity effects is an Environmentally Significant Issue for the purposes of this Study |
| Agriculture | <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <ul style="list-style-type: none"> Area of Class 1, 2 and 3 lands removed (by class) </div> <div style="border-left: 1px solid black; padding-left: 10px;"> <ul style="list-style-type: none"> 1 2 3 Total </div> </div> <ul style="list-style-type: none"> Area of speciality crop lands affected Number of farmsteads removed Number of farms affected Number of farm severances - landlocked parcels <ul style="list-style-type: none"> - new units Area of landlocked parcels | <ul style="list-style-type: none"> Preservation of productive agricultural land Minimization of disruption to agricultural operations | <ul style="list-style-type: none"> Agriculture and the preservation of good quality agricultural land and viable farming operations is an Environmentally Significant Issue for the purposes of this Study |
| Community | <ul style="list-style-type: none"> Effects (division, disruption) to Unity Side Road Hamlet | <ul style="list-style-type: none"> Preservation of existing community and minimization of disruption to local residents | <ul style="list-style-type: none"> Effects in terms of proximity impacts, noise and visual, the loss of community through "barrier" effects, and impacts to future development combined to make the Unity Road area an Environmentally Significant Area for the purposes of this Study. |
| Heritage | <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <ul style="list-style-type: none"> Number of heritage features affected (by type) </div> <div style="border-left: 1px solid black; padding-left: 10px;"> <ul style="list-style-type: none"> - Direct - Indirect </div> </div> | <ul style="list-style-type: none"> Preservation of heritage resources | <ul style="list-style-type: none"> Heritage resources contributed to Book Road being an Environmentally Significant Area for the purposes of this Study |
| Noise | <ul style="list-style-type: none"> Number of residential receivers experiencing an increase of over 5 dBA over (future) ambient, as a result of an alternative, ten years after construction | <ul style="list-style-type: none"> Minimization of disturbance to local residents | <ul style="list-style-type: none"> Noise is an Environmentally Significant Issue for the purpose of this Study |

TABLE 5.3
FACTORS USED FOR THE DETAILED ASSESSMENT OF ALTERNATIVE ALIGNMENTS
(continued)

| Factor | Criteria | Rationale | Significance |
|--------------------------------|---|---|---|
| Natural Environmental Features | <ul style="list-style-type: none"> . Area of all forests, plantations and other woodlots affected . Area of highest quality and maturing representative woodlots affected . Area of Woodland Improvement Act agreement areas affected . Area of identified Waterfowl area affected . Number of stream crossings <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <div style="border-left: 1px solid black; border-top: 1px solid black; width: 20px; height: 10px; margin-bottom: 2px;"></div> <div style="border-left: 1px solid black; border-top: 1px solid black; width: 20px; height: 10px; margin-bottom: 2px;"></div> <div style="border-left: 1px solid black; border-top: 1px solid black; width: 20px; height: 10px;"></div> </div> <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> Primary Secondary </div> | <ul style="list-style-type: none"> . Regional Official Plans indicated that such areas of forest cover should be retained and managed or expanded . Recognition that not all wooded areas are of equal value (MNR and field survey) . Recognition of an existing land use commitment and management effort expended (MNR) . Area of wildlife concern (outside existing woodlands) used by waterfowl for nesting, brooding and staging (MNR) . Regional Official Plans identify stream banks and valleys as areas for maintenance and expansion of forest cover | <ul style="list-style-type: none"> . Vegetation (woodlots and forested areas) is an Environmentally Significant Issue for the purposes of this Study |
| Planning Policies | <ul style="list-style-type: none"> . Effects on future land use . Effects on development proposals | <ul style="list-style-type: none"> . Protection of future development options | <ul style="list-style-type: none"> . Planning Policies at White Church and Unity Roads contributed to these being Environmentally Significant Areas for the purposes of this Study |
| Visual | <ul style="list-style-type: none"> . Compatibility with landscape character . Effects on views | <ul style="list-style-type: none"> . Identification of this issue by MCC . Identification of this issue by MCC | <ul style="list-style-type: none"> . Visual concerns at Book Road, Unity Road and White Church Road contributed to these being Environmentally Significant Areas for the purposes of this Study |
| Cost | <ul style="list-style-type: none"> . Construction (cost assumed to be proportional to length) . Property . Total | <ul style="list-style-type: none"> . Minimization of cost | <ul style="list-style-type: none"> . Cost of all alternatives was considered to be relatively the same and thus was not considered significant |
| Traffic Service | <ul style="list-style-type: none"> . Access to the airport | <ul style="list-style-type: none"> . Objective of Highway 6 (New) to improve access for the airport . Objective of Highway 6 (New) to allow staging to best match travel demand with financial expenditures . Objective of Highway 6 (New) to increase use of the Caledonia Bypass. This is best met by alignments close to existing Highway 6 as they best serve the major traffic demand from Caledonia and areas to the south into Hamilton | <ul style="list-style-type: none"> . Traffic service, in particular the movement between Highway 6 (New) south of the airport back to existing Highway 6 into Hamilton, and access to the airport were significant factors in the evaluation of alternatives |

TABLE 5.4
GENERAL ENVIRONMENTAL EFFECTS AND STANDARD MITIGATING MEASURES

| Environmental Effect | Standard Mitigating Measures |
|---|---|
| Sedimentation and turbidity of adjacent water-bodies | <ul style="list-style-type: none"> • Appropriate construction techniques • Erosion control by interception ditches, terracing, slopes, etc. • Contain sediments by check dams, sediment traps, etc. |
| Volume and frequency of stormwater flow | <ul style="list-style-type: none"> • Normally investigated as part of detail design drainage investigations to determine measures to minimize amount of increase to adjacent watercourses; flow retention measures considered when applicable |
| Stream bank erosion | <ul style="list-style-type: none"> • Bank stabilization measures |
| Interception of aquifers and springs | <ul style="list-style-type: none"> • Raise vertical alignment above the water table, where possible |
| Contamination of groundwater by highway runoff | <ul style="list-style-type: none"> • Use of contained storage and ensure positive drainage where possible |
| Disruption of aquatic habitat | <ul style="list-style-type: none"> • Restore stream banks • Maintain streamflow • Minimize stream diversion, channelization • Apply seasonal construction constraints • Ensure proper culvert design and placement |
| Loss or disturbance of significant trees and/or ground flora | <ul style="list-style-type: none"> • Utilize close-cut clearing rather than grubbing to retain maximum regenerative potential • Protect retained vegetation during construction • Landscape planting |
| New or increased exposure of forest edge with resultant effects of wind throw, loss of wildlife habitat | <ul style="list-style-type: none"> • Utilize close-cut clearing |
| Road salt damage | <ul style="list-style-type: none"> • Utilize resistant species in landscape planting • No sensitive specialty crops, therefore additional measures are not applicable |
| Removal of productive farmland | <ul style="list-style-type: none"> • Design facility to minimize land requirement • Rehabilitate areas disturbed by construction |
| Disruption of field access | <ul style="list-style-type: none"> • Provide alternative access |
| Disruption of tile and surface drainage systems | <ul style="list-style-type: none"> • Minimize duration of disruption • Restore tile and surface drainage system |
| Dust during construction | <ul style="list-style-type: none"> • Use dust control/suppression methods • Utilize temporary erosion control methods on staged construction |
| Groundwater contamination | <ul style="list-style-type: none"> • Minimize disturbance to septic systems • Rebuild disturbed systems |
| Construction Noise | <ul style="list-style-type: none"> • Operational constraints to be imposed during construction (to be negotiated with appropriate municipalities); procedures required by MOE/MTC noise protocol for construction noise to be applied |
| Removal of residences on wells and septic systems | <ul style="list-style-type: none"> • Pump out and fill septic tanks • Fill wells per MOE guidelines |
| Damage or relocation of septic systems or wells | <ul style="list-style-type: none"> • Repair or relocate per MOE regulations |

NOTE: Additional standard mitigating measures relating to construction activities are provided in Part II, Table 4.1.

Three alternatives to the Book Road Interchange with Alignment A were developed, these are referred to as A1, A2, and A3 and are shown in Exhibit 5.3.

Table 5.5 shows a comparison between Alternatives A1, A2, and A3 at Book Road. The comparative evaluation focusses primarily on design criteria, impacts and cost because the service provided by the three alignments is essentially the same.

In evaluating A1, A2 and A3, Alternative A3 was successively compared to Alternatives A1 and A2. Compared to Alternative A1, Alternative A3 had greater impacts, particularly with respect to residences and the cemeteries, greater costs, and offered much less flexibility and poorer highway geometrics. In comparison to Alternative A2, Alternative A3 had greater impacts with respect to the cemeteries, greater costs, and offered no advantages over Alternative A2 in terms of its geometrics and flexibility. Accordingly, Alternative Alignment A3 was rejected.

Alternative A2 was evaluated in comparison to Alternative A1, A2 had greater impacts, particularly with respect to residences, somewhat greater costs, and offered poorer geometrics and far less flexibility. Thus, Alternative A2 was rejected in favour of Alternative A1.

Alternative A1 was selected largely on the basis that it provided the best highway geometrics and the greatest flexibility in meeting Transport Canada's long-term requirements and avoiding conflicts with Ontario Hydro. It requires the removal of only one residence and leaves the Pet Cemetery unaffected. The Parkin Cemetery is unaffected and remains within the interchange lands. A heritage feature, the Book House is indirectly affected by the removal of the barn, but the barn removed is not, in itself, of any great historical significance as it was constructed in the 1950s. Alternative A1, however, has marginally greater agricultural impacts and marginally greater impacts to the natural environment.

Alternative A1 at Book Road was used in all further evaluations of the Highway 6 (New) alignment alternatives.

5.9.2 Alternative Alignments A, B, and C

Alternative A was recommended over Alternatives B and C. Table 5.6 shows all of the factors and criteria used in the evaluation. Appendix G documents the effects to farm operations.

In evaluating Alternative Alignments A, B, and C, Alternative C was successively compared to Alternatives A and B. In comparison to both Alternatives A and B, Alternative C provided the poorest traffic service at the highest cost with the greatest impacts, especially with respect to agriculture. It provided no advantages and had major disadvantages in comparison to both Alternatives A and B and was, therefore, rejected.

When Alternative B was evaluated in comparison to Alternative A, it provided poorer traffic service at a greater cost with greater impacts, especially property, agricultural, and heritage impacts. Thus, Alternative B was rejected in favour of Alternative A. It should be noted that Alternatives B and C also had greater noise, planning policy, and visual impacts than Alternative A.

5.9.3 Alternative Alignments 1, 2, 3, and 4

Alternative 1 was recommended over Alternatives 2, 3 and 4. Table 5.7 shows all of the factors and criteria used in the evaluation. Appendix G documents the effects to farm operations.

The corridor traffic forecasting (see Section 2.3) identified a major demand for traffic travelling on Highway 6 (New), south of the Airport to switch back to existing Highway 6 to travel on into Hamilton. Approximately one-half of the forecasted corridor volume on Highway 6 (New) south of the Airport is expected to make this movement.

A sensitivity analysis was undertaken to estimate the potential for each of the Alternatives 1, 2, 3, and 4 to carry this traffic movement.

Comparisons were made with other bypasses in the area to determine the amount of traffic which would continue to use existing Highway 6 and the amount that would divert to Highway 6 (New).

This analysis indicated that Alignment 1, closest to existing Highway 6, would attract 100% of the demand. Alignment 4, furthest from existing Highway 6, would attract only 25% of the demand. Alternatives 2 and 3 would attract 75% and 50%, respectively. Therefore, it was determined that alignments in close proximity to existing Highway 6 would offer far superior traffic service and carry substantially higher traffic volumes.

In evaluating Alternative Alignments 1, 2, 3, and 4, Alternative 4 was successively compared to Alternatives 1, 2, and 3. In comparing

FIDDLERS GREEN ROAD

BOOK ROAD

HIGHWAY 53

230 kV HYDRO

CEMETERY

PET
CEMETERY

230 kV HYDRO

230 kV HYDRO

230 kV HYDRO

SOUTHCOTE ROAD

HAMILTON CIVIC AIRPORT

Highway 6 (New) HAMILTON TO CALEDONIA Environmental Assessment & Preliminary Design Report



0 100 200 m

- Residential
- Cemetery
- Buildings of Heritage Importance (historic, aesthetic)

- Airport Property Boundary
- Highway 6 New Designated Section
- Hydro

Exhibit 5-3(a)

**Book Road Crossing,
Alternative Alignment A1**



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



0 100 200 m



Residential
Cemetery
Buildings of Heritage Importance (historic, aesthetic)



Airport Property Boundary
Highway 6 New Designated Section
Hydro

Exhibit 5.3(b)

**Book Road Crossing,
Alternative Alignment A2**

FIDDLERS GREEN ROAD

BOOK ROAD

HIGHWAY 53

230 KV HYDRO

PARKIN CEMETERY

PET CEMETERY

230 KV HYDRO

230 KV HYDRO

230 KV HYDRO

SOUTHCOTE ROAD

HAMILTON CIVIC AIRPORT

Highway 6 (New)
HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



0 100 200m

- Residential
- Cemetery
- Buildings of Heritage Importance (historic aesthetic)

- Airport Property Boundary
- Highway 6 New Designated Section
- Hydro

Exhibit 5.3 (c)

**Book Road Crossing.
Alternative Alignment A3**

TABLE 5.5
COMPARISON BETWEEN ALTERNATIVES A1, A2 AND A3 AT BOOK ROAD

| | ALTERNATIVE ALIGNMENTS from midway between Highway 53 and Book Road to midway between Book Road and Butter Road | | |
|---|---|----------------------------------|---|
| | A1 | A2 | A3 |
| <u>PROPERTY</u> | | | |
| Number of Residences Taken | 1 | 2 | 1 |
| Number of Residential Properties Affected | 0 | 0 | 2 |
| Pet Cemetery | unaffected | access road required | removed |
| Parkin Cemetery | within interchange lands | unaffected | proximity impacts |
| <u>HERITAGE</u> | | | |
| Other Heritage Features Affected | Barn on farmstead 116a removed | none | none |
| <u>AGRICULTURE</u> | | | |
| Area of Class 1 to 3 Land by Class: | | | |
| 1 | 3.4 ha | 1.8 ha | 2.2 ha |
| 2 | 3.6 ha | 7.2 ha | 4.8 ha |
| 3 | 20.1 ha | 18.1 ha | 20.1 ha |
| Number of Farm Severances | 4 | 4 | 4 |
| Area of Landlocked Parcels | 8.0 ha | 10.0 ha | 0 ha |
| Area of Active Farmland Removed from Production | 5.6 ha | 5.1 ha | 6.7 ha |
| Area of Specialty Crop Land Removed | 2.6 ha | 0 ha | 0 ha |
| <u>NATURAL ENVIRONMENTAL FEATURES</u> | | | |
| Area of all Forest, Plantations and other Woodlots Affected | 12.6 ha | 12.6 ha | 8.4 ha |
| Area of Highest Quality and Maturing Representative Woodlots Affected | 10.4 ha | 9.9 ha | 7.6 ha |
| <u>NOISE</u> | | | |
| Number of Residences experiencing over 5 dBA increase | 4 | 2 | 2 |
| <u>COST</u> | | | |
| | --- | additional cost of one residence | additional cost of acquiring Pet Cemetery |
| <u>HIGHWAY GEOMETRICS</u> | | | |
| | best | acceptable | acceptable |
| <u>FLEXIBILITY</u> | | | |
| | provides greatest flexibility for meeting long-term requirements of Transport Canada and Ontario Hydro | little flexibility | little flexibility |

Detailed Assessment of Alternative Alignments A, B and C

| Factor | Criteria | Alternative Alignment A | Alternative Alignment B | Alternative Alignment C |
|--------------------------------|---|--|--|---|
| Property | <ul style="list-style-type: none"> Number of residential properties taken Number of commercial properties taken Number of industrial properties taken Number of institutional properties taken Number of properties from which land is required but which are not eliminated (by type) <ul style="list-style-type: none"> Residential Commercial Industrial | <ul style="list-style-type: none"> 3 0 0 0 0 0 0 0 | <ul style="list-style-type: none"> 3 0 0 0 0 0 1 (Nursery) 0 | <ul style="list-style-type: none"> 2 0 0 0 0 0 1 (Nursery) 0 |
| Agriculture | <ul style="list-style-type: none"> Area of class 1, 2, and 3 lands removed (by class) <ul style="list-style-type: none"> 1 2 3 TOTAL Area of specialty crop lands affected Number of farmsteads removed Number of farms affected Number of farm severances <ul style="list-style-type: none"> landlocked parcels new units Area of landlocked parcels | <ul style="list-style-type: none"> 35 ha 9 ha 24 ha 66 ha 3 ha 0 10 1 2 7 ha | <ul style="list-style-type: none"> 37 ha 12 ha 19 ha 68 ha 7 ha 1 12 1 2 4 ha | <ul style="list-style-type: none"> 46 ha 10 ha 15 ha 71 ha 6 ha 1 17 6 1 39 ha |
| Heritage | <ul style="list-style-type: none"> Number of heritage features affected (by type) <ul style="list-style-type: none"> Direct Indirect | <ul style="list-style-type: none"> Barn in Farmstead 116a Parkin Cemetery 116b Stump fence | <ul style="list-style-type: none"> None Farmstead 114 & 116 Stump fence | <ul style="list-style-type: none"> Historic Neutral Hamlet Stump fence |
| Noise | <ul style="list-style-type: none"> Number of residences experiencing over 5 dBA increase | <ul style="list-style-type: none"> 11 | <ul style="list-style-type: none"> 12 | <ul style="list-style-type: none"> 14 |
| Natural Environmental Features | <ul style="list-style-type: none"> Area of all forests, plantations and other woodlots affected Area of highest quality and maturing representative woodlots affected Number of stream crossings <ul style="list-style-type: none"> Primary Secondary | <ul style="list-style-type: none"> 13 ha 10 ha 1 2 | <ul style="list-style-type: none"> 4 ha 4 ha 1 3 | <ul style="list-style-type: none"> 9 ha 7 ha 1 2 |
| Planning Policies | <ul style="list-style-type: none"> Effects on development proposals | <ul style="list-style-type: none"> None | <ul style="list-style-type: none"> Creates awkward parcels on Highway 53 | <ul style="list-style-type: none"> Creates awkward parcels on Highway 53 |
| Visual | <ul style="list-style-type: none"> Compatibility with landscape character Effects on views | <ul style="list-style-type: none"> Generally compatible with landscape character; facility follows lot lines and travels parallel to existing roads Interchange at Book Road is partially screened by existing vegetation, that together with distance from the ridge reduces effects of vista at that location Facility is partially screened by existing woodlots | <ul style="list-style-type: none"> Not compatible with landscape character; facility does not generally follow road pattern or lot lines Interchange at Book Road disrupts vista from ridge Difficult to screen (mitigate) view of interchange without blocking view from the ridge | <ul style="list-style-type: none"> Same as B Same as B |
| Cost | <ul style="list-style-type: none"> Construction (cost assumed to be proportional to length) Property Total | <ul style="list-style-type: none"> Shortest in length, thus lowest cost | <ul style="list-style-type: none"> 6% higher than A, falls between A and C in cost | <ul style="list-style-type: none"> 12% higher than A, thus highest cost |
| Traffic Service | <ul style="list-style-type: none"> Access to the airport Staging | <ul style="list-style-type: none"> Closest to the airport, thus offers best access to the airport Easily staged to the airport | <ul style="list-style-type: none"> Falls between A and C in traffic service for the airport In order to stage to the airport, would require further upgrading of Butter Road | <ul style="list-style-type: none"> Furthest from the airport, thus has poorest access to the airport In order to stage to the airport, would require upgrading of Butter Road |

Detailed Assessment of Alternative Alignments 1, 2, 3 and 4

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

| Factor | Criteria | Alternative Alignment 1 | Alternative Alignment 2 | Alternative Alignment 3 | Alternative Alignment 4 |
|--------------------------------|---|--|---|--|---|
| Property | <ul style="list-style-type: none"> Number of residential properties taken Number of commercial properties taken Number of industrial properties taken Number of institutional properties taken Number of properties from which land is required but which are not eliminated (by type) <ul style="list-style-type: none"> Residential Commercial Industrial Institutional | <ul style="list-style-type: none"> 2 0 2 0 1 0 2 2 | <ul style="list-style-type: none"> 1 0 2 0 1 0 2 1 | <ul style="list-style-type: none"> 2 0 2 0 5 0 2 1 | <ul style="list-style-type: none"> 0 0 2 0 1 1 2 1 |
| Agriculture | <ul style="list-style-type: none"> Area of class 1 and 2 lands removed (by class) <ul style="list-style-type: none"> 1 2 TOTAL Number of farmsteads removed Number of farms affected Number of farm severances <ul style="list-style-type: none"> landlocked parcels new units Area of landlocked parcels | <ul style="list-style-type: none"> 88 ha 8 ha 96 ha 0 32 6 4 45 ha | <ul style="list-style-type: none"> 89 ha 3 ha 92 ha 1 31 5 4 56 ha | <ul style="list-style-type: none"> 76 ha 12 ha 88 ha 0 26 ha 5 5 26 ha | <ul style="list-style-type: none"> 77 ha 9 ha 86 ha 0 18 4 3 74 ha |
| Community | <ul style="list-style-type: none"> Effects (division, disruption) to Unity Side Road Hamlet | <ul style="list-style-type: none"> Divides community Disrupts Seneca Unity School and community | <ul style="list-style-type: none"> Divides community Disrupts community and Seneca Unity School | <ul style="list-style-type: none"> Divides community Disrupts community | <ul style="list-style-type: none"> Does not divide community Disrupts community at Mines Road to some extent |
| Heritage | <ul style="list-style-type: none"> Number of heritage features affected (by type) <ul style="list-style-type: none"> Direct Indirect | <ul style="list-style-type: none"> None Unity Road Church site (12) Farmstead (76) and Cemetery (74) on White Church Road | <ul style="list-style-type: none"> None Farmstead (76) and Cemetery (74) on White Church Road | <ul style="list-style-type: none"> None Farmstead (76) and Cemetery (74) on White Church Road Farmsteads (76) and (78a) on White Church Road | <ul style="list-style-type: none"> None Farmstead (76) and Cemetery (74) on White Church Road |
| Noise | <ul style="list-style-type: none"> Number of residences experiencing over 5 dBA increase | <ul style="list-style-type: none"> 30 + school | <ul style="list-style-type: none"> 45 + school | <ul style="list-style-type: none"> 40 | <ul style="list-style-type: none"> 19 |
| Natural Environmental Features | <ul style="list-style-type: none"> Area of all forests, plantations and other woodlots affected Area of highest quality and maturing representative woodlots affected Area of Woodland Improvement Act agreement areas affected Area of identified waterfowl Area affected Number of stream crossings <ul style="list-style-type: none"> Primary Secondary | <ul style="list-style-type: none"> 16 ha 14 ha 0 ha 5.5 ha 1 1 | <ul style="list-style-type: none"> 25 ha 22 ha 0.8 ha 7.2 ha 1 0 | <ul style="list-style-type: none"> 21 ha 20 ha 0 ha 0 ha 1 0 | <ul style="list-style-type: none"> 2 ha 0 ha 0 ha 0 ha 1 0 |
| Planning Policies | <ul style="list-style-type: none"> Effects on future land use Effects on development proposals | <ul style="list-style-type: none"> Prevents some infilling and agriculturally related residential development May inhibit further hamlet development | <ul style="list-style-type: none"> Prevents some infilling and agriculturally related residential development May inhibit further hamlet development | <ul style="list-style-type: none"> Prevents some infilling and agriculturally related residential development May inhibit further hamlet development | <ul style="list-style-type: none"> Prevents some additional agriculturally related residential development May affect some additional hamlet development |
| Visual | <ul style="list-style-type: none"> Compatibility with landscape character Effects on views | <ul style="list-style-type: none"> Follows lot lines and road layout; generally compatible with landscape character Facility is visible from Seneca Unity school on Unity Road Also visible from houses east of alignment with open view across field | <ul style="list-style-type: none"> Follows lot lines and road layout; generally compatible with landscape character Facility is visible from houses on Unity Road; existing woodlots will partially screen view | <ul style="list-style-type: none"> Follows lot lines and road layout; generally compatible with landscape character Facility is visible from houses on on Unity Road | <ul style="list-style-type: none"> Alignment cuts across lots south of Townline Road; not compatible with landscape character Facility is visible from houses on Mines Road View could be partially screened with landscape planting |
| Cost | <ul style="list-style-type: none"> Construction (cost assumed to be proportional to length) Property Total | <ul style="list-style-type: none"> Longest length (14% longer than 4) thus highest cost Deep cut through Unity Road will add to cost | <ul style="list-style-type: none"> Second longest (9% longer than 4) thus second highest cost | <ul style="list-style-type: none"> Third longest (4% longer than 4) thus third highest cost | <ul style="list-style-type: none"> Shortest, thus lowest cost |
| Traffic Service | <ul style="list-style-type: none"> Proximity to existing Highway 6 | <ul style="list-style-type: none"> Provides an excellent connection to Highway 6 and thus best serves the major traffic movement into Hamilton. | <ul style="list-style-type: none"> Provides a good connection to Highway 6 and would adequately serve the major traffic movement into Hamilton | <ul style="list-style-type: none"> Provides a fair connection to Highway 6 and would serve the major traffic movement into Hamilton to a limited extent | <ul style="list-style-type: none"> Provides a poor connection to Highway 6 and would not serve the major traffic movement into Hamilton |

Alternative 4 to Alternative 1, Alternative 4 provided significantly inferior traffic service with greater impacts, especially with respect to agriculture and the severity of the disruption to viable, large-scale agricultural operations in the south part of the Study Area. However, Alternative 4 would be less expensive ($\pm 10\%$) to build than Alternative 1. Then in comparison to Alternative 2, Alternative 4 provided inferior traffic service but had a fairly similar number of unacceptable impacts--those to the agricultural operations by Alternative 4 versus the impacts to the community and the natural environment by Alternative 2. However, Alternative 4 would be somewhat less expensive (10%) to build than Alternative 2. Similarly when Alternative 4 was compared to Alternative 3, it offered poorer traffic service with a corresponding amount of unacceptable impacts. Alternative 4 would, however, be slightly less expensive to construct than Alternative 3. Therefore based primarily on its poorer traffic service and its unacceptable agricultural impacts, Alternative 4 was rejected in favour of the other three alternative alignments.

Then, Alternative 3 was successively compared to Alternatives 1 and 2. In comparing Alternative 3 to Alternative 1, Alternative 3 provided much poorer traffic service with far greater impacts, particularly with respect to the Unity Road Hamlet and the natural environment. However, Alternative 3 would be less expensive (10%) to build than Alternative 1. In comparison to Alternative 2, Alternative 3 provided poorer traffic service with fairly similar impacts albeit at slightly less cost. Therefore, based on its poorer traffic service and its similar or greater impacts, Alternative 3 was eliminated in favour of the remaining two alternatives.

Finally, Alternative 2 was evaluated in comparison to Alternative 1. Although it would be somewhat less expensive, Alternative 2 offered poorer traffic service and had greater impacts than Alternative 1, especially with respect to the Unity Road Hamlet and the natural environment. Therefore, its poorer service and greater impacts led to the elimination of Alternative 2 in favour of Alternative 1.

Alternative 1 provides the best service with the fewest impacts.

5.9.4 Airport Road Alignment

Following the first series of Public Information Centres, a local resident suggested an alignment for Highway 6 (New) using a portion of Airport Road west of Mount Hope. This alternative is shown on Exhibit 5.2. Generally, alignments along existing roadways are not

feasible as they require the removal of numerous private accesses and therefore create significant property damage. However, Airport Road has only a few access points in this area and thus warranted further study.

The following documents the comparative evaluation of Alignment A1 including the east-west portion along the mid-lot line between Airport Road and White Church Road and Alternative A1A with its east-west portion along Airport Road.

The evaluation considered those portions of the alignments from Highway 53 to Greens Road. Most factors and criteria were used in the evaluation, with the exception of those factors that would not apply to the east-west portion and/or would be the same for both alternatives. The criteria that were not used were:

- effects to the Unity Road community;
- planning policies;
- visual analysis.

Table 5.8 documents the assessment of the two alternatives.

In comparison to Alignment A1, Alignment A1A provided similar service to the airport with similar construction costs. However, Alignment A1A requires the removal of four additional residences including a farmstead and has substantially greater noise effects to nearby residents, although it requires about half as much high quality forest. Therefore, based on the nature of its greater impacts; i.e., the number of properties required, Alternative Alignment A1A was rejected in favour of Alignment A1.

5.10 Modifications to the Recommended Alignment

5.10.1 Book Road to Butter Road

South of Book Road Alignment A swings to the southeast. This swing creates some landlocked parcels, removes a farmstead at Butter Road and fragments a woodlot.

In order to avoid the farmstead and minimize both farm severances and the fragmentation of a woodlot as requested by the Ministry of Agriculture and Food and the Ministry of Natural Resources, respectively, the alignment was shifted to the southwest (see Exhibit 1.1). This shift results in an alignment adjacent to the property line. Thus the

TABLE 5.8
DETAILED ASSESSMENT OF ALTERNATIVE A1 AND ALTERNATIVE A1A

| | A1 | A1A |
|---|---|---|
| <u>PROPERTY</u> | | |
| Number of Residences Taken | 3 | 6 |
| Commercial Properties Taken | 0 | 0 |
| Industrial Properties Taken | 2 | 2 |
| Institutional Properties Taken | 0 | 0 |
| Residential Properties Affected | 1 | 1 |
| Commercial Properties Affected | 0 | 0 |
| Industrial Properties Affected | 2 | 2 |
| Institutional Properties Affected | 1 | 1 |
| <u>AGRICULTURE</u> | | |
| Areas of Class 1, 2, and 3 Lands Removed by Class: | | |
| Class 1 | 121 ha | 121 ha |
| Class 2 | 17 ha | 17 ha |
| Class 3 | 24 ha | 24 ha |
| TOTAL | 162 ha | 162 ha |
| Number of Farmsteads Removed | 0 | 1 |
| Area of Specialty Crop Lands Affected | 3 ha | 3 ha |
| Number of Farms Affected | 42 | 38 |
| Number of Farm Severances: | | |
| Landlocked | 7 | 6 |
| New Units | 6 | 6 |
| Area of Landlocked Parcels | 52 | 44 |
| <u>HERITAGE</u> | | |
| Number of Heritage Features Affected (by type): | | |
| Direct | Farmstead 116A | Farmstead 116A |
| | | Farmstead 87 |
| Indirect | Parkin Cemetery 116B | Parkin Cemetery 116B |
| | Stump Fence | Stump Fence |
| | Unity Road Church 12 | Unity Road Church 12 |
| | Farmstead 76 | Farmstead 76 |
| | Cemetery 74 | Cemetery 74 |
| <u>NOISE</u> | | |
| Number of Residences Experiencing Increase of Over 5dBA | 30 plus school | 34 plus school |
| <u>NATURAL ENVIRONMENTAL FEATURES</u> | | |
| All forests & Woodlots | 29 ha | 14 ha |
| Highest Quality Woodlots & Forests | 24 ha | 9 ha |
| Stream Crossings: | | |
| Primary | 2 | 2 |
| Secondary | 3 | 3 |
| <u>COST</u> | | |
| Construction | Same length, thus same cost | Same length, thus same cost |
| <u>TRAFFIC SERVICE</u> | | |
| Airport Connection | Provides direct connection to the airport | Provides direct connection to the airport |

recommended alignment parallels the existing lot lines for most of the distance between Book and Butter Roads.

To provide direct service to the existing airport terminal an interchange is provided to Airport Road immediately south of the recently expanded Hamilton Civic Airport (see Section 5.10.3). Thus no interchange is proposed at Butter Road with the recommended alignment and no residences are required at Butter Road.

In summary, the modifications to the recommended alignment between Book Road and Butter Road have lessened the agricultural impacts by parallelling the lot line, avoided fragmenting a woodlot, and in conjunction with the decision that no interchange is required at Butter Road has avoided the taking of any residences or farmsteads on Butter Road. Environmental impacts were thereby mitigated through design.

5.10.2 White Church Road Area

Following the Second Series of Public Information Centres, concerns were raised by the Township of Glanbrook Council and local residents about the interchange at and realignment of White Church Road. In addition, Transport Canada requested that the interchange servicing the south side of the Hamilton Civic Airport be aligned directly opposite the existing terminal access road. The White Church Road area is considered Environmentally Significant for the purposes of this Study.

The Township of Glanbrook Council requested that the interchange at White Church Road be provided in an area south of White Church Road to allow for uninterrupted east-west travel on White Church Road and to allow the potential for development in Mount Hope to extend southward to White Church Road.

In order to respond to these requests, four alternative configurations were evaluated for the White Church Road interchange area. These alternatives are shown on Exhibit 5.4.

Scheme 1 provides direct ramps to and from the south only from Highway 6 (New) to existing Highway 6 local access would be provided by the interchange from Airport Road. A link road is required between Highway 6 (New) and existing Highway 6.

Scheme 2 is a modification of the full Parclo 'A' interchange at White Church Road with diamond ramps on the east side of Highway 6 (New) to reduce proximity impacts to residents along White Church Road.

Scheme 3 is the interchange configuration presented to the public and Council at the October 1985 series of Public Information Centres. This scheme provides a full Parclo 'A' interchange at White Church Road.

Scheme 4 provides a Trumpet 'B' interchange at Highway 6 (New) with a link road to existing Highway 6.

Table 5.9 outlines the factors taken into consideration in the evaluation of these four schemes. Cost was considered to be relatively the same for all four alternatives.

Scheme 4, the Trumpet 'B' interchange south of White Church Road, was selected because it best met the concerns of the Township of Glanbrook and the local residents. Scheme 4 allows for uninterrupted east-west travel on White Church Road and development in Mount Hope can extend southerly to White Church Road. The interchange and link road is located approximately 350 m from the residents on White Church Road and thus significantly reduces concerns over proximity effects. Scheme 4 also provides the best traffic service as it serves both the major traffic movement to and from the south between Highway 6 (New) and existing Highway 6, and local traffic to and from the north.

In comparison to Schemes 1 and 4, Schemes 2 and 3 offered poorer traffic service, greater proximity impacts to residents on White Church Road, prohibited continuous east-west travel along White Church Road, and prohibited the extension of development southerly from Mount Hope to White Church Road. Therefore, Schemes 2 and 3 were rejected in favour of either Scheme 1 or Scheme 4.

In comparing Scheme 4 and Scheme 1, Scheme 4 provides slightly improved flexibility in traffic services as there are ramps provided to and from the north on Highway 6 (New). Both schemes offer through east-west travel on White Church Road and allow development to extend southerly from Mount Hope to the White Church Road area. Therefore on the basis of somewhat better traffic service, Scheme 4 was selected over Scheme 1.

5.10.3 Airport Road Interchange

The selection of Scheme 4, the Trumpet 'B' interchange south of White Church Road, provides sufficient spacing to allow the Airport Road interchange be aligned directly opposite the existing Airport passenger terminal road. This direct connection was requested by Transport Canada.



Highway 6 (New)
HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

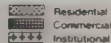


Exhibit 5.4 (a)

White Church Road.
Interchange Alternative. Scheme 1



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



0 100 200m

- Residential
- Commercial
- Institutional

Exhibit 5.4(b)
White Church Road.
Interchange Alternative. Scheme 2



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

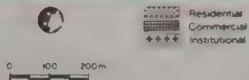


Exhibit 5.4 (c)

White Church Road.
Interchange Alternative. Scheme 3



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

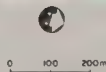


Exhibit 5.4(d)

White Church Road.
Interchange Alternative, Scheme 4

TABLE 5.9
COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA
CHIPPEWA ROAD TO GLANCASTER ROAD

| | Scheme 1 | Scheme 2 | Scheme 3 Parclo 'A' at White Church Road | Scheme 4 Trumpet 'B' |
|--|--|--|--|--|
| | Direct Ramps | Partial Diamond | | |
| <u>PROPERTY</u> | | | | |
| Number of residential properties taken | 1 | 1 | 1 | 1 |
| Number of commercial properties taken | 0 | 0 | 0 | 0 |
| Number of industrial properties taken | 0 | 0 | 0 | 0 |
| Number of institutional properties taken | 0 | 0 | 0 | 0 |
| Number of properties for which land is required but which are not eliminated (by type) - Residential | 1 | 1 | 1 | 1 |
| - Commercial | 3 | 0 | 0 | 3 |
| - Industrial | 0 | 0 | 0 | 0 |
| - Institutional | 0 | 1 | 1 | 0 |
| <u>AGRICULTURE</u> | | | | |
| Area of Class 1 and 2 lands removed (by Class) | | | | |
| - 1 | 48 | 48 | 48 | 48 |
| - 2 | <u>2</u> | <u>2</u> | <u>2</u> | <u>2</u> |
| - Total | 50 | 50 | 50 | 50 |
| Number of farmsteads removed | 0 | 0 | 0 | 0 |
| Number of farms affected | 12 | 13 | 13 | 12 |
| Number of farm severances | | | | |
| - landlocked | 5 | 3 | 3 | 5 |
| - new units | 3 | 1 | 1 | 3 |
| Area of landlocked parcels | 20 ha | 16 ha | 16 ha | 21 ha |
| <u>HERITAGE</u> | | | | |
| Number of heritage features affected (by type) | | | | |
| - direct | None | None | None | None |
| - indirect | Farmstead (76) on White Church Road | Farmstead (76) on White Church Road and Cemetery (74) on White Church Road | Farmstead (76) on White Church Road and Cemetery (74) on White Church Road | Farmstead (76) on White Church Road. |
| <u>COMMUNITY</u> | | | | |
| Effects on Mount Hope and White Church Road Development | Some disruption to White Church Road residents; some increase in traffic on Airport Road and in Mount Hope | Some disruption and perceived negative impacts to White Church residents | Some disruption and perceived negative impacts to White Church Road residents | Some disruption to White Church Road residents |

TABLE 5.9
COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA
CHIPPEWA ROAD TO GLANCASTER ROAD
(continued)

| | Scheme 1 Direct Ramps | Scheme 2 Partial Diamond | Scheme 3 Parclo 'A' at White Church Road | Scheme 4 Trumpet 'B' |
|--|--|---|---|---|
| <u>NOISE</u> | | | | |
| Number of residences experiencing over 5 dBA increase | 3 | 3 | 3 | 3 |
| <u>NATURAL ENVIRONMENT</u> | | | | |
| Area of all forests, plantations and other woodlots affected | 6 | 5 | 5 | 6 |
| Area of highest quality and maturing representative woodlots affected | 6 | 5 | 5 | 6 |
| Area of Woodland Improvement Act areas affected | 0 | 0 | 0 | 0 |
| Area of Identified Waterfowl Area affected | 9 | 6 | 6 | 11 |
| Number of stream crossings - primary | 1 | 1 | 1 | 1 |
| - secondary | 0 | 0 | 0 | 0 |
| <u>PLANNING POLICIES</u> | | | | |
| Effects on future land use | Preserves open space and eventual link between Mount Hope and White Church Road settlement | Precludes future expansion of residential area of Mount Hope to include White Church Road settlement | Precludes future expansion of residential area of Mount Hope to include White Church Road settlement | Preserves open space and eventual link between Mount Hope and White Church Road settlement |
| <u>TRAFFIC SERVICE</u> | | | | |
| Movement to/from existing Hwy. 6 served directly by ramps south of White Church Road | Movement to/from existing Hwy. 6 served directly by ramps south of White Church Road | Serves movement to/from existing Hwy. 6 indirectly via White Church Road interchange; White Church Road interchange provides full movement to/from Hwy. 6 (New) for local traffic | Serves movement to/from existing Hwy. 6 indirectly via White Church Road interchange; White Church Road interchange provides full movement to/from Hwy. 6 (New) for local traffic | Movement to/from existing Hwy. 6 served by ramps south of White Church Road. Local traffic also served by ramps to/from the north |
| Ramps serve local traffic to/from the south | Ramps serve local traffic to/from the south | | | |
| Local traffic to/from the north on Hwy. 6 (New) must reroute to Airport Road interchange | Local traffic to/from the north on Hwy. 6 (New) must reroute to Airport Road interchange | Restricts E-W travel on White Church Road | Restricts E-W travel on White Church Road | |

The previous access configuration provided to Airport Road was a Trumpet 'B' interchange with a connection to Airport Road approximately 150 m to the east.

The interchange configuration allowing for direct access to the airport access road provides better traffic service by avoiding a jog connection between Highway 6 (New) and the airport. The direct connection creates a new farm unit on the Jerome farm. However, the severance follows the existing fence line and the two parcels severed are currently farmed separately. Access will be provided to the new unit from Airport Road.

5.11 Summary

Based on a detailed evaluation of the foregoing factors Alternative A1, subsequently modified, was selected as it provides the best combination of cost, service and impacts. The recommended alignment is presented in detail in Chapter 6.

6. Description of the Recommended Alignment, Identified Environmental Effects, Mitigation and Commitments to Future Work

6.1 General

The recommended alignment for the undertaking is described in this Chapter.

In this Environmental Assessment Report, the following procedures have been documented in terms of dealing with mitigating measures:

1. For potential effects not identified as being related to "environmentally significant areas and issues" (as defined in Chapter 2); the effects and basic mitigating measures are discussed in the report sections below, describing the recommended plan.
2. For potential impacts that are related to "environmentally significant areas and issues", appropriate mitigating measures are discussed in more detail in report Section 6.3. Further, more information on mitigation will be provided during detailed design, where appropriate (see Section 6.4) in the Design and Construction Reports.

This Chapter is divided as follows:

- Section 6.2 The Recommended Highway 6 (New) Alignment and Profile
- Section 6.3 Identified Environmentally Significant Areas/ Issues and Commitment to Mitigation
- Section 6.4 Commitment to Future Work

Exhibit 1.1 shows the recommended alignment for Highway 6 (New). Details of the recommended plan are shown in Part II, Preliminary Design Report. A detailed assessment of the recommended alignment is shown in Table 6.1.

TABLE 6.1
DETAILED ASSESSMENT OF RECOMMENDED ALIGNMENT

| Criteria | Recommended Alignment Hwy. 403 to Glancaster Rd. | Recommended Alignment Glancaster to Greens Rd. | TOTAL Hwy. 403 to Greens Rd. |
|---|---|---|---------------------------------|
| <u>PROPERTY</u> | | | |
| Number of residential properties taken | 2 | 2 | 4 |
| Number of commercial properties taken | 0 | 0 | 0 |
| Number of industrial properties taken | 0 | 2 | 2 |
| Number of institutional properties taken | 0 | 0 | 0 |
| Number of properties from which land is required but which are not eliminated (by type) | | | |
| - Residential | 2 | 1 | 3 |
| - Commercial | 1 (Nursery) | 2 | 3 |
| - Industrial | 0 | 1 | 1 |
| - Institutional | 0 | 1 | 1 |
| <u>AGRICULTURE</u> | | | |
| Area of Class 1, 2 and 3 lands removed (by Class) | | | |
| - 1 | 26 ha | 98 ha | 124 ha |
| - 2 | 10 ha | 10 ha | 20 ha |
| - 3 | 22 ha | 0 ha | 22 ha |
| | <u>58 ha</u> | <u>108 ha</u> | <u>166 ha</u> |
| Area of specialty crop lands affected | 3 ha | 0 ha | 3 ha |
| Number of farmsteads removed | 0 | 0 | 0 |
| Number of farms affected | 11 | 31 | 42 |
| Number of farm severances - landlocked parcels | 3 | 3 | 6 |
| - new units | 0 | 5 | 5 |
| Area of landlocked parcels | 22 ha | 43 ha | 65 ha |
| <u>COMMUNITY</u> | | | |
| Effects (division, disruption) to Unity Side Road Hamlet | | Divides Unity Road Hamlet Disrupts Seneca Unity School and Community | |
| <u>HERITAGE</u> | | | |
| Number of heritage features affected (by type) | | | |
| - Direct | Barn in Farmstead 116a | None | |
| - Indirect | Parkin Cemetery 116B Stump Fence | Unity Road Church Site (12) Farmstead (76) at White Church Road | |
| <u>NOISE*</u> | | | |
| Number of residences experiencing over 5 dBA increase | 11 plus school | 10 | 21 plus school |

TABLE 6.1
DETAILED ASSESSMENT OF RECOMMENDED ALIGNMENT
(continued)

| Criteria | Recommended Alignment Hwy. 403 to Glancaster Rd. | Recommended Alignment Glancaster to Greens Rd. | TOTAL Hwy. 403 to Greens Rd. |
|---|--|--|---------------------------------|
| <u>NATURAL ENVIRONMENTAL FEATURES</u> | | | |
| Area of all forests, plantations and other woodlots affected | 20 ha | 14 ha | 34 ha |
| Area of highest quality and maturing representative woodlots affected | 19 ha | 11 ha | 30 ha |
| Area of Woodland Improvement Act agreement areas affected | 0 ha | 0 ha | 0 ha |
| Area of identified Waterfowl area affected | 0 ha | 11 ha | 11 ha |
| Number of stream crossings - Primary | 0 | 1 | 1 |
| - Secondary | 3 | 2 | 5 |
| <u>PLANNING POLICIES</u> | | | |
| Effects on future land use | None | Prevents some infilling in Unity Road Hamlet and agriculturally-related residential development | |
| Effects on development proposals | None | May inhibit further development of Unity Road Hamlet | |
| <u>VISUAL</u> | | | |
| Compatibility with landscape character | Facility does not always follow road pattern or lot lines | Follows lot lines and road layout; generally compatible with landscape character | |
| Effects on views | Interchange at Book Road will be visible from the ridge but existing vegetation will partially screen view of it | Facility is visible from Seneca Unity School on Unity Road | |
| <u>COST</u> | | | |
| Construction | 20.0 M | 28.0 M | 48 M |
| Property | 1.2 M | 0.8 M | 2 M |
| TOTAL | 21.2 M | 28.8 M | 50 M |
| <u>TRAFFIC SERVICE</u> | | | |
| Access to the airport | Provides good traffic service to the airport (north side) | Provides an excellent connection to the airport (south side) | |
| Staging | Easily staged to the airport utilizing Butter Road (see Section 6.2.13) | | |
| Proximity to existing Highway 6 | | Provides an excellent connection to Highway 6 and thus serves the major traffic movement into Hamilton | |

* NOTE: Route planning level of detail identified 29 residences and one school as experiencing over 5 dBA increase. Preliminary design level of detail reduced this to 21 residences and one school.

6.2 General Description of the Project

Table 6.2 summarizes the recommended Highway 6 (New) alignment and profile, together with the design control, potential effects and appropriate mitigating measures.

Preliminary design plans and profiles are shown in Part II, Appendix A of this report.

The following sections briefly describe the recommended alignment, in sections from the Caledonia By-pass northerly to Highway 403.

6.2.1 Greens Road to Unity Road (Station 9+50, 12+150)

Highway 6 (New) connects to the north end of the existing Caledonia By-pass at Greens Road. There will be a Parclo A interchange provided between Highway 6 (New) and Greens Road.

The ultimate plans for the Caledonia By-pass call for a four-lane cross section provided by a widening on the west side. Highway 6 (New) is being designed as an ultimate six-lane facility; thus, two lanes must be dropped at the Greens Road interchange.

One residence will experience noise increases of more than 5 dBA.

Proceeding northerly from Greens Road, the alignment for Highway 6 (New) swings to the northeast off the existing lot line. This swing from the alignment is necessitated by the preferred crossing point at Unity Road (see Section 2.2.2).

Several farms are severed when the alignment swings from the existing lot line. However, two of the units are within continuous ownership (Fleming) between Mines Road to the west and existing Highway 6 to the east. Therefore, no landlocked parcels are created on the Fleming parcels.

The McTear property is severed creating a large landlocked parcel. However, considerable portion of these lands are in designated hazard lands.

The Varga farm on Unity Road is severed creating a new unit. Access is provided from Unity Road to the new unit. A portion of the Varga farm is within the urban designation of the Unity Road Hamlet.

6.2.2 Unity Road to Townline Road (Stations 12+150 to 13+030)

Highway 6 (New) crosses Unity Road between the Seneca Unity School and the United Church. The removal of one residence is required (Simmons). The crossing is in an area of deep cut which reduces the noise and visual impacts on the adjacent community.

The deep cut at Unity Road mitigates the noise effects to the extent that all residences experience noise increases less than 5 dBA. The school will experience an increase of more than 5 dBA.

The profile of Unity Road is not changed, therefore, there is no change in travel patterns, or driveway access on Unity Road. Fencing will be provided along the right-of-way to protect pedestrians and school children.

The United Church will be adjacent to the right-of-way but it is not actively used by the Community as services are offered only once per year.

Northerly from Unity Road, the alignment proceeds towards Townline Road.

Between Unity Road and Townline Road two farms are severed. No landlocked parcels are created as access is provided to either Unity Road or Townline Road. One farm, Bates, on Unity Road, has a considerable portion within the designated urban area of the Unity Road Hamlet.

6.2.3 Townline Road to Leeming Road (Stations 13+030 to 13+910)

The alignment proceeds northerly, parallelling the existing lot lines. No landlocked parcels or new units are created. The right-of-way required is from the rear of lots only.

A structure is provided at Townline Road over Highway 6 (New). No driveway access is affected. One residence on Townline Road will experience an increase in noise levels of more than 5 dBA.

6.2.4 Leeming Road to Chippewa Road (Station 13+910 to 15+250)

Northerly from Leeming Road toward Chippewa Road the alignment parallels the existing lot line. No landlocked parcels or new units are created. The right-of-way is required only from the rear of lots.

A structure is provided at Leeming Road over Highway 6 (New). No driveway access is affected. A service road from Townline Road was investigated as an alternative to the structure at Leeming Road as Leeming Road terminates west of the alignment. However, the service road was more expensive, provided poorer service and required more agricultural land. Thus, a structure was selected to provide access to the residences along Leeming Road.

Two residences at Leeming Road will experience noise level increases greater than 5 dBA.

6.2.5 Chippewa Road to White Church Road (Station 15+250 to 16+590)

The alignment for Highway 6 (New) swings slightly to the northwest north of Chippewa Road deviating from lot lines to avoid the Airport.

Four residences at Chippewa Road will experience noise level increases of more than 5 dBA. Two residences in the Link Road-White Church Road area will experience noise level increases of more than 5 dBA.

A landlocked parcel is created on the Palmero In Trust land. However, a significant portion of the landlocked area is within designated hazard lands. Property will be purchased by the Ministry of Transportation and Communications.

A structure will be provided at Chippewa Road over Highway 6 (New). No driveway access is affected.

A crossing of a 230 KV hydro line is required. This has been investigated with the assistance of Ontario Hydro and is judged to be feasible. Some relocation of the existing plant may be required.

A structure is required over the Welland River. The final design of this crossing is to be reviewed with the local Conservation Authority and the Ministry of Natural Resources during detail design.

An interchange is provided with a new link road to Highway 6 (Existing). The interchange is required to provide local access and to service the major traffic movement between Highway 6 (New) and Highway 6 (Existing). The traffic analyses undertaken identified a major demand from Caledonia and areas to the south, along Highway 6 (New), back to existing Highway 6 into Hamilton. This interchange facilitates this movement.

Some waterfowl nesting area land is required. The alignment impacts the easterly extremity only of the waterfowl area. The majority of the nesting area is not affected.

6.2.6 White Church Road to Airport Road Connection (Station 16+590 to 17+570)

A structure is provided over Highway 6 (New) at White Church Road. In order to provide driveway access to residences along White Church Road, a minor realignment of White Church Road is required.

One residence is removed at White Church Road (Little).

North of White Church Road the alignment swings to avoid the airport and then parallels the mid-lot line between Airport Road and White Church Road.

6.2.7 Airport Road Connection to Glancaster Road (Station 17+570 to 19+150)

A Trumpet 'A' interchange is provided to service the terminal on the south side of the Airport. The connection to Airport Road from the interchange is along an existing fence line on the Jerome lands. A new farm unit is created with access to Airport Road. The connection to Airport Road is directly opposite the existing terminal access, as requested by Transport Canada.

The interchange requires the removal of some woodlot area.

The alignment for Highway 6 (New) proceeds westerly from the Airport Road connection, paralleling the existing lot lines. The alignment is slightly north of the mid-lot line between Airport Road and White Church Road to avoid an existing high pressure petroleum pipeline right-of-way. This alignment shift also minimizes impacts to several significant woodlots.

6.2.8 Glancaster Road to Butter Road (Station 19+150 to 20+530)

A structure is provided on Glancaster Road over Highway 6 (New). No driveway access is affected.

Proceeding from Glancaster Road, the alignment swings to the northeast towards Highway 403 and to parallel lot lines north of Butter Road. Lands recently acquired by Braun Nurseries are severed. However, access is provided to Glancaster Road and there are no landlocked parcels.

There is a hydro crossing of the 230 KV line immediately south of Butter Road. This crossing has been investigated with the assistance of Ontario Hydro and is judged to be feasible, requiring some relocation of the existing hydro plant.

6.2.9 Butter Road to Book Road (Station 20+530 to 22+570)

A structure is provided over Highway 6 (New) at Butter Road. In order to maintain access to private driveways, a realignment of Butter Road is required. In order to avoid drainage problems in the area, the profile of Butter Road and Highway 6 (New) is elevated.

The alignment proceeds northerly from Butter Road toward Book Road, paralleling existing lot lines north of Book Road. There are no landlocked or new units created, as lands are required primarily along the rear of the lot lines. South of Book Road the alignment swings to the northeast and an interchange is provided at Book Road.

Some high quality woodlot is removed between Book and Butter Roads. The alignment was modified to remove only the westerly portions of woodlots to avoid fragmentation.

Four residences at Butter Road will experience noise level increases of more than 5 dBA.

One residence is removed at Book Road (Petrie).

6.2.10 Book Road to Highway 53 (Station 22+570 to 24+590)

The location of the interchange of Book Road was determined through the consideration of the following:

- Transport Canada's requirements for zoning, navigation and lighting associated with the Hamilton Airport;
- Ontario Hydro 230 KV line which had recently been lowered to accommodate the extension of Runway 12L;
- the Ancaster Animal Cemetery;
- the Parkin Cemetery;
- the historic Book House;
- several residences in the area;
- several viable large farms, some with specialty crop lands.

The detailed analysis of various alternative interchanges in terms of the above factors is documented in Section 5.9 of the Report.

At the crossing of Book Road the alignment swings to the northeast toward the existing Highway 6 (New) designation. This swing in the alignment severs the Jerome farm. However, the severed lands are farmed in conjunction with the lands immediately to the east. Access will be provided for these lands from Book Road.

The severance of the Jerome land cannot be avoided due to the design controls and constraints in place at Book Road.

A Parclo 'A' interchange is provided at Book Road. The interchange is required to service the long-term plans of Transport Canada to provide a new terminal on the north side of the Airport. The interchange also provides for local and regional access.

Three residences at Book Road will experience noise level increases of 5 dBA or more.

The Parkin (Book) Cemetery is located within the interchange but does not require closure or relocation. The operation and maintenance of this cemetery is subject to the Cemeteries Act and negotiations will be undertaken with the Town of Ancaster for the Town to maintain its current responsibilities for maintenance.

Northerly from Book Road, the alignment returns to the existing designation and parallels existing lot lines to Highway 53.

There are two woodlots affected by the alignment. One immediately north of Book Road is slightly fragmented. However, the design controls/constraints of Book Road make this fragmentation unavoidable.

North of the hydro crossing another woodlot is slightly fragmented. A shift in the alignment was considered; however, the highway geometrics and conflicts with the hydro crossing made this shift infeasible.

Highway 6 (New) crosses three 230 KV hydro lines. This crossing was examined in cooperation with Ontario Hydro and judged to be feasible with some minor relocation of the existing plant being required.

6.2.11 Highway 53 to Highway 403 (Station 24+590 to 25+280)

The alignment for Highway 6 (New) follows the existing designation north of Highway 53. The profile of Highway 6 (New) is elevated over Highway 53 in order to avoid drainage problems to allow Highway 53 to remain at its current elevation, thus eliminating potential driveway problems.

One house is removed on the south side of Highway 53 (McFarland). This property has been purchased by the MTC.

Two residences at Highway 53 will experience noise level increases of more than 5 dBA. Mitigation in the form of barrier walls on the structure of Highway 53 is being provided.

6.2.12 Highway 403 Interchange (Station 25+280)

The existing designation is the only location along Highway 403 that provides for sufficient land for an interchange between Highway 403 and Highway 6 (New) (see Section 4.1.1).

A trumpet 'A' interchange will provide for all movements between Highway 6 (New) and Highway 403.

All Highway 6 (New)/Highway 403 interchange ramps are provided for within the designated lands.

Ramps to Highway 53, to and from the east on Highway 403, are being provided to offload the Fiddler's Green/Highway 403 interchange and to service the Scenic Woods development on Highway 53 east of Southcote Road. Additional lands are required for these connections.

6.2.13 Staging

Highway 6 (New) will be stage constructed. The exact nature of the staging will be based on demand for the facility and resources available, in keeping with provincial highway priorities. Exact staging descriptions will be documented in the Design and Construction reports; the proposed stages for Highway 6 (New) are as follows:

Stage 1

The first stage of Highway 6 (New) will likely be an undivided two-lane arterial roadway. This will form part of the ultimate northbound lanes. Access will be provided by at-grade intersections at Book Road, Airport Road and Greens Road, and an interchange connecting to existing Highway 6. All other roadway crossings will be grade separated.

An at-grade intersection may be provided at Book Road in the event that interim access to the airport is required. In recognition of the high volume of trucks and the safety considerations of at-grade intersections the number of at-grade crossings has been minimized.

Stage 2

Under Stage 2 the two southbound lanes would be constructed to form a four-lane divided highway with a 22 m median and rural open drainage. Intersections at Book Road, Airport Road and Greens Road would be upgraded to full interchanges. This will result in a four-lane grade

separated freeway with access by interchange only, from Highway 403 to the Caledonia Bypass at Greens Road.

Stage 3

When traffic demand warrants, widening to six-lanes can be accommodated by reducing the median to 15 m and maintaining rural drainage. This results in the ultimate six-lane facility.

Further information on staging is presented in Part II, Section 5, Design Criteria.

6.3 Environmentally Significant Areas and Issues

Section 3.3 of this report provided a definition of "environmentally significant areas and issues". Based upon that definition and all comments and concerns raised and analyzed during the route location study, "environmentally significant areas and issues" affected by the recommended plan have been identified. These areas/issues are discussed in the following subsections.

These significant areas and issues were identified in Chapter 4 and used in the comparative evaluation outlined in Chapter 5.

Several of the issues identified in Chapter 4 are combined by geographical area as some issues on their own would not be considered significant but when combined with others create a significant area/issue.

A large portion of the mitigation of these identified areas/issues was undertaken through the design of the recommended alignment. Additional mitigation will be outlined in Section 6.4, Commitments to Future Work.

6.3.1 Noise

This issue is considered to be environmentally significant for the purposes of this Study based upon:

- comments raised by members of the public, local elected representatives, and the Ministry of the Environment;
- analyses carried out by the Study Team.

In the route planning phase of this Study, noise impacts were analyzed based on criteria outlined in the MOE-MTC noise protocol. This included the comparison of numbers of noise sensitive locations (i.e. known and assumed residential outdoor amenity areas and the Unity School school yard) affected by the various alternative alignments. Topographic features or intervening obstructions were not taken into consideration at this level of detail, although the cut at Unity Road on Alternative 1 was incorporated into the overall decision-making process. Some 29 residential receivers and the Unity School school yard were identified in this phase as being expected to experience more than 5 dBA increase over ambient conditions, ten years after construction, as a result of the recommended alignment.

During the preliminary design phase of the Study, further investigations were conducted using refined horizontal and vertical alignment information, and incorporating major topographic details and screening by major intervening obstacles such as buildings or embankments. It was determined that only 21 residential receivers and the Unity School school yard would be expected to experience more than 5 dBA increase over future ambient conditions, ten years after construction of the ultimate undertaking. (Appendix H, Part I indicates the nature of the ten-years-after construction predictions used.)

The MOE-MTC noise protocol calls for the investigation of mitigation measures within the right-of-way where noise level increases are greater than 5 dBA in the post-construction scenario. The protocol indicates that, in such cases, if project costs are not significantly affected and where a minimum attenuation of 5 dBA can be achieved, as averaged over first row receivers, the selected measures will be introduced within the right-of-way. Additionally, any mitigation measures adopted will attempt to achieve levels as close to, or lower than the objective level (i.e. 55 dBA or ambient) as is technically, economically and administratively feasible. In practice, noise mitigation would be installed where it is cost effective.

Mitigation measures considered within the right-of-way included noise barriers, noise berms, changes to vertical and horizontal alignment, and the use of specific pavement surfaces. Further investigation of appropriate measures was then carried out to determine whether they were technically feasible. Finally, the cost effectiveness was considered in terms of the number of first row receivers which would receive the required benefit. General barrier costs were compared to the benefits to the adjacent properties. In practice, a barrier is not normally constructed where it is not cost effective. To be cost

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(see Appendix A, Part II for Plan and Profile)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|------------------------------|----------------------|--|---|---|--|--|---|
| Greens Road to Unity Road | 9+50 to 12+150 | Connects to north end of Caledonia Bypass with a Parclo 'A' inter- change at Greens Road. | Meets centre line of Greens Road at existing grade. | Initial stage inter- section to be at- grade. | Profile meets exist- ing grade of Caledonia Bypass/Greens Road intersection. | | |
| | | | | Northbound lanes (cur- rently two-way) of Caledonia Bypass have been constructed. Widening to ultimate 4 lanes south of Greens Road to be accomplished by con- structing 2 lanes southbound. | In initial Stage, two northbound lanes to be constructed to match existing Caledonia Bypass. | | Highway 6 (New) is six lanes ultimate, Bypass is four lanes ultimate. Therefore, two lanes dropped at Greens Road. |
| | | | | | Two industrial parcels required at Greens Road. | Properties will be purchased. | |
| | | | | | One residence experiences noise level increases of more than 5 dBA. | No mitigation proposed, not cost effective. | |
| | | Proceeds north- easterly off lot line toward Unity Road. | Terrain varies considerably. In fill averaging 2 to 3 m. | Alignment must cross Unity Road between Church and School to minimize impacts to Unity Road Hamlet (see Section 6.2.2). | | | |
| | | | Structure required over Seneca Creek. | | | Design of structure over Seneca Creek to be undertaken at time of final design and reviewed with Conservation Authority and MNR. | Seneca Creek crossing will be subject to Conservation Authority review under O.Reg. 154/86 (Fill, Con- struction and Altera- tion to Waterways Regulations). |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED ALIGNMENT | DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|-----------------------------|------------------|---|---|---|---|---|----------|
| | | | | | Farms severed due to swing from lot line. | Fleming farms are severed but no landlocked parcels created as ownership is continuous from Mines Road to Hwy. 6 (Existing). McTear farm is severed. Some of landlocked parcel is within designated hazard lands. Varga farm severed but no landlocked parcel as access is possible from Unity Road. Part of farm is within the Urban designation of the Unity Road Hamlet. | |
| Unity Road to Townline Road | 12+150 to 13+030 | Through Unity Road Hamlet, alignment is between the Seneca Unity School and the Church. | Through Unity Road profile is depressed 7 to 9 m. | Only location along Unity Road where crossing can be in deep cut and remove only one residence. | One house is removed. Alignment crosses through designated Rural Hamlet. | Property will be purchased. Deep cut at Unity Road mitigates noise and visual impacts. Profile of Unity Road is not changed. Therefore, no change to travel patterns, or driveway access along Unity Road. Unity Road will be grade separated during both initial and ultimate stage. Therefore, traffic is separated from the community. | |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|-------------------------------|------------------|--|---|--|---|---|---|
| | | | | | | Fencing along R-0-W will protect pedestrian and school children. | |
| | | | | | Church is adjacent to the alignment. | None required. | Church only used once a year for services. |
| | | | | | School will experience noise increases of more than 5 dBA. | Deep cut at Unity Road mitigates noise level increases. | No residences at Unity Road will experience noise level increases of more than 5 dBA. |
| | | Alignment proceeds northerly toward Townline Road. | In cut to station 12+500, then slightly above existing grade following generally level land to Townline Road. | Parallels existing lot lines north of Townline Road. | Bates farm severed but no landlocked lands created. Access is available from Unity Road. Part of farm is within the urban designation of the Unity Road Hamlet. | New access road from Unity Road will be constructed to new farm unit created. | |
| | | | | | Varga farm severed, no landlocked parcel as access is provided from Townline Road. | | |
| Townline Road to Leeming Road | 13+030 to 13+910 | Proceeds northerly along existing lot lines | Slightly above existing grade. | Alignment parallels existing lot lines. | No landlocked parcels or new units created. | | |
| | | | | | R-0-W required from rear of lot lines. | | |
| | | | | | Structure provided at Townline Road over Highway 6 (New). | | No driveway access affected. |
| | | | | | One residence at Townline Road will experience noise level increases of more than 5 dBA. | None proposed, not cost effective. | |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED ALIGNMENT | DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|------------------------------------|-------------------|--|---|---|--|---|--|
| Leeming Road to Chippewa Road | 13+910 to 15+250 | Proceeds northerly along existing lot lines. | Above grade in approximately 4 m of fill. | Alignment parallels existing lot lines. | No landlocked parcel or new units created. Structure provided at Leeming Road over Highway 6 (New). R-O-W required from rear of lot lines. Two residences at Leeming Road will experience noise level increases of more than 5 dBA. | None proposed, not cost effective. | No driveway access affected. |
| Chippewa Road to White Church Road | 15+250 to 16+590. | Proceeds northerly, begins swing to the west to avoid the Airport. | Slightly above grade to provide drainage for crossing of Welland River. Beyond Welland River, slightly below grade. | Alignment parallels lot lines where possible. | Landlocked parcel created on Palmero In Trust lands. Four residences at Chippewa Road will experience noise level increases of more than 5 dBA. Two residences south of White Church Road will experience noise level increases of more than 5 dBA. Structure provided at Chippewa Road over Highway 6 (New). Structure required over Welland River. | Landlocked parcel will be purchased by MTC. None proposed, not cost effective. Final design of Welland River crossing to be reviewed with local Conservation Authorities and MNR. | Significant portion of this farm unit lies within designated hazard lands. No driveway access affected. |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|---|------------------------|---|--------------------------|--|--|---|---|
| | | | | Trumpet 'B' inter- change provided to Highway 6 (Existing). | Link road required to Highway 6 (Existing). | | Interchange and link road required to serve major traffic movement to Hamilton. |
| | | | | | Changes traffic volumes and patterns along Highway 6. | | Some commercial establishments may experience decreased exposure to traffic. |
| | | | | Alignment swings to the west to avoid the Airport. | Alignment can no longer parallel lot lines. | | |
| | | | | | Crossing of 230 KV Hydro line. | | Some relocation of existing plant may be required. |
| | | | | | Some waterfowl nest- ing area to be removed. | Construction activities will be restricted and appropriate tech- niques undertaken to minimize impact on waterfowl. | Alignment impacts easterly extremity only. Majority of nesting area unaffected. |
| White Church Road to Airport Road Connection | 16+590 to 17+570 | Swings to north- west to avoid the Airport. | Slightly above grade. | Profile set to pro- vide drainage over numerous water- courses. | One house removed at White Church Road. | Property will be purchased. | |
| | | | | | Structure provided on White Church Road over Highway 6 (New). | White Church Road realigned to maintain access to residences and farms along White Church Road and maintain continuous E-W travel. | |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|---|------------------------|---|---|--|---|---|---|
| | | | | | Two residences at White Church Road will experience noise level increases of more than 5 dBA. | None proposed, not cost effective. | |
| Airport Road Connection to Glancaster Road | 17+570 to 19+150 | Parallels lot lines. | Above grade in approximately 1 m of fill over undulating terrain. | Terrain undulates significantly. Pro- file set to provide drainage to numerous watercourses. | | | |
| | | | | Trumpet 'A' inter- change provided directly opposite existing terminal facilities. | Connection to Airport Road required. | Airport connection along existing fence line. New farm unit created, access provided via Airport Road. | Interchange and connection to Airport Road is required to service the terminal on the south side of the Airport. 'Direct' connection requested by Transport Canada. |
| | | | | High pressure petroleum pipeline R-O-W parallels mid-lot line between Airport and White Church Roads. | Alignment shifted to the north of mid-lot line to avoid pipeline R-O-W. | Alignment shift due to pipeline R-O-W, minimizes impacts to several signifi- cant woodlots. | |
| Glancaster Road to Butter Road | 19+150 to 20+530 | Swings to north- east toward Highway 403. | Above grade approximately 1 m of fill. | Alignment must swing to northeast toward Highway 403 and to parallel lot lines north of Butter Road. | Structure provided on Glancaster Road over Highway 6 (New) | No private drive- ways affected. | |
| | | | | | Braun nursery lands are severed. | Structure provided over Highway 6 (New) at Glancaster Road will provide access between two properties. | Lands recently purchased by Braun. |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|-----------------------------|------------------------|--|---|---|--|---|--|
| | | | | | Hydro crossing of 230 KV line south of Butter Road. | | Crossing is feasible, some relocation of existing hydro plant required. |
| Butter Road to Book Road | 20+530 to 22+570 | Proceeds northerly parallel to lot lines. | In fill approxi- mately 2 to 3 m above grade. | Alignment parallels lot lines. | No landlocked or new units created. Land required primarily along lot lines. | | |
| | | | | | Structure provided over Highway 6 (New) at Butter Road. | Butter Road realigned to main- tain access to private residences. | Due to drainage re- quirements, elevation of Highway 6 (New) and Butter Road has been raised in the vicinity of Butter Road. |
| | | | | | Four residences at Butter Road will experience noise increases of more than 5 dBA. | None proposed, not cost effective. | |
| | | | | | Possible removal of sections of stump fence. | Relocation/ replacement will be discussed with owner at time of construction. | |
| | | | | | Area of high quality woodlot removed. | Alignment parallels lot line thus wood- lot is not frag- mented. | |
| Book Road to Highway 53 | 22+570 to 24+590 | Shifts to north- east toward exist- ing designation. | Deep cut approxi- mately 8 m at Book Road to Station 23+300 then approximately 2 m of fill to High- way 53. | Factors affecting location of interchange at Book Road include: - Transport Canada's requirements for zoning, naviga- tion, and lighting | Detailed evaluation of Book Road crossing led to decision to swing off designated lands. | | See Section 5.8.1 for a detailed evaluation of Book Road crossing. |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|----------|---------|---------------------------------|----------------|---|---|---|---|
| | | | | <ul style="list-style-type: none"> - Ontario Hydro 230 KV line - Ancaster Animal Cemetery - Parkin Human Cemetery - Historic Book House - several residences - several farms. | | | |
| | | | | | Jerome farm severed. | Access will be provided from Book Road. | Lands are farmed in conjunction with those immediately to the east. |
| | | | | | Three residences at Book Road will experience noise level increases of more than 5 dBA. | None proposed, not cost effective. | |
| | | | | | One house is removed at Book Road. | Property will be purchased. | |
| | | | | | Barn is removed. | Relocation will be negotiated with the owner. | Barn constructed in the 1950s and is not associated with an active farm unit. |
| | | | | | Parclo 'A' interchange provided at Book Road. | | Interchange required to service Transport Canada's long-term requirements to provide a terminal on the north side of the Airport and to provide local access. |
| | | | | | Some woodlot removed immediately north of Book Road. | | Removal of woodlot unavoidable due to design controls at Book Road. |
| | | | | | Woodlot fragmented north of Hydro crossing. | | Shift in alignment considered to avoid fragmentation. However, highway geometrics and conflicts with hydro made shift infeasible. |

TABLE 6.2
SUMMARY OF RECOMMENDED ALIGNMENT
(continued)

| LOCATION | STATION | RECOMMENDED DESIGN ALIGNMENT | RECOMMENDED DESIGN PROFILE | DESIGN CONTROLS | EFFECTS OR CONDITION CHANGES (Actual or Potential) | MITIGATING MEASURES | COMMENTS |
|------------------------------|------------------------|---|---|--|---|--|---|
| | | | | | Highway 6 (New) crosses three 230 KV hydro lines. | | Crossing is feasible, some relocation of existing plant may be required. |
| Highway 53 to Highway 403 | 24+590 to 25+280 | Follows existing designation to Highway 53. | Elevated over Highway 53. In 5 to 6 m of fill. | Drainage requirements and access to private residences required that Highway 6 (New) go over Highway 53. | Alignment elevated over Highway 53. Two residences will experience noise level increases of more than 5 dBA. | Barrier walls are being provided to mitigate noise effects. | |
| | | | | | One house is removed at Highway 53. | | Property purchased by MTC. |
| | | | | | Affects licenced sand and gravel pit. | None. | Investigate aggregate source for construc- tion of Highway 6 (New). |
| Highway 403 | 25+280 | Trumpet "A" inter- change provided. | Highway 6 (New) over Highway 403. | All movements provided between Highway 6 (New) and Highway 403. Ramps to Highway 53 to and from the east on Highway 403 are being provided to offload the Fiddler's Green interchange and service the Scenic Woods development on Highway 53. Existing designation is the only location along Highway 403 that provides sufficient room for an interchange. | | All Highway 6 (New)/ Highway 403 inter- change ramps are provided for within designated lands. Additional land beyond that already designated will be required for connection to Highway 53 to and from the east on Highway 403. | |

effective, a large number of residences must benefit from a noise attenuation measure.

At a preliminary design level of detail, the attenuation provided by either noise barriers or noise berms may be considered to be equivalent. Because of berm space requirements, they may not be applied where limited areas occur between the alignment and adjacent residences. As well, berms may require additional property beyond the normal right-of-way. In the Highway 6 (New) Study Area, the use of berms in many locations would require the acquisition, and loss from production, of additional prime agricultural land; the minimization of such acquisition is a major objective of the Study.

At the preliminary design phase, horizontal and vertical alignments are largely determined by technical and physical constraints, and only minor alterations are possible. In this Study, these constraints included the location of the recommended alignment between adjacent residences, interchange and over/underpass requirements, drainage restrictions, crossing of hydro electric lines and the objective of minimizing property acquisition or disruption by following or paralleling survey lot lines where possible. Route planning and preliminary design decisions, such as the shift of alternative Alignment 1 slightly westerly at White Church Road, or the final location of the recommended alignment at the Butter Road crossing, are examples of where a variety of factors, including a general consideration of noise, determined the preliminary design level of detail alignments. Vertical alignment refinements can occur during detail design and no further preliminary design level of detail changes were determined to be appropriate for mitigation purposes.

The use of open friction course pavement (OFC) is often considered in an attempt to reduce the amount of tire-generated noise. A decision to use OFC in selected locations is normally made during detail design and the use of specific pavement surfaces for attenuation purposes will be considered during this phase.

Finally, the use of broad-leaf vegetative plantings to serve as a screen for highway noise is frequently raised by members of the public. Such plantings do not produce an audible reduction in highway-generated noise, and have not been considered as an effective form of noise mitigation for this Study.

Table 6.3 contains a summary of considerations made for noise mitigation at each noise sensitive location adjacent to the recommended alignment, at a preliminary design level of detail. Re-evaluation of

noise impacts and possible mitigation will be made during detail design, to incorporate detailed information current at that time. These investigations will be documented in the Design and Construction Reports.

At Highway 53 noise mitigation will be provided. Noise mitigation was determined to be either cost ineffective or technically infeasible at other crossroads. At Highway 53 the construction of barrier walls, in association with the structure's parapet walls, is expected to achieve acceptable levels of attenuation for the immediately adjacent residential noise receivers, at a relatively minor cost as part of the overpass construction. A re-evaluation of appropriate mitigation at this location will be carried out as part of the detail design for this crossing, and will be documented in the Design and Construction Reports.

During construction, the provisions for construction noise outlined in the MOE-MTC noise protocol will be followed. The specific terms of this compliance will be documented in the Design and Construction Reports. Although no blasting is anticipated, should any be identified during detail design, monitoring for noise and vibration impacts, including pre-blast surveys, will be considered and documented in the Design and Construction reports.

6.3.2 Agriculture

This issue is judged to be environmentally significant based upon:

- comments made by members of the public, elected representatives and External Team members;
- analysis undertaken by the Study Team.

Agricultural effects and their mitigation were considered for both farm operations and removal of farm lands.

A detailed assessment of the effect of Highway 6 (New) on farm operations was undertaken as part of the route location study. The results of this analysis are included in Appendix G. Effects to agricultural operations consist primarily of farm severances and restrictions to farm machinery movement.

In order to mitigate against farm severances, existing lot lines were followed wherever possible. To mitigate against restriction of farm

TABLE 6.3
SUMMARY OF NOISE MITIGATION CONSIDERATIONS
(Preliminary Design Level-Of-Detail)

| Receiver of over 5 dBA Increase Plan (Pt.2, App.2) | | | Name | Ambient (Future) (dBA) | Increase Over Ambient (dBA) | Horizontal & Vertical Alignment Controls | Berm Feasible? | Barrier Feasible? | Minimum 5 dBA Attenuation | | | Barrier/Berm Cost Effective? | Comments |
|--|----------|-----|----------------|------------------------------|-----------------------------------|---|-------------------|----------------------|---------------------------|------------|-------------|---------------------------------|---|
| Crossroad | Quadrant | | | | | | | | Achievable | Height (m) | Length (m) | | |
| Greens | NW | A2 | Bothwright | 45* | 7 | b | Yes+ | Yes | Yes | 2.5 | 515 | No - 1 residence/quad. | |
| Unity | NW | A4 | Unity School | 45* | 6 | a,b,d | No | n/a | Yes | - | - | Cut provides attenuation | |
| Townline | NW | A6 | Dixon | 47 | 6 | b | Yes+ | Yes | Yes | 1.9 | 300 | No - 1 residence | |
| Leeming | SW | A6 | Leeming | 45* | 10 | a,b | Yes+ | Yes | Yes | 2.2 | 440 | No - 1 residence/quad. | |
| | NW | A6 | Zolaturik | 45* | 9 | a,b | Yes+ | Yes | Yes | 2.2 | 430 | No - 1 residence/quad. | |
| Chippewa | SE | A8 | (No name) | 46 | 6 | a,b | Yes+ | Yes | Yes | 2.2 | 415 | No - 2 residences/quad. | |
| | SE | A8 | Hosstein | 45* | 7 | a,b | Yes+ | Yes | Yes | 2.2 | 415 | No - 2 residences/quad. | |
| | SW | A8 | Ernst | 45* | 7 | a,b | Yes+ | Yes | Yes | 2.6 | 430 | No - 1 residence/quad. | |
| | SW | A8 | Quinn | 45* | 10 | a,b | Yes+ | Yes | Yes | 1.6 | 355 | No - 1 residence/quad. | |
| | NW | A8 | Palermo | 45* | 9 | a,b | Yes+ | Yes | Yes | 2.3 | 415 | No - 1 residence/quad. | |
| White Church | SE | A10 | Okimi | 47 | 9 | b,d | Yes | Yes | Yes | 2.0 | 280 (link) | No - 1 residence/quad. | Berm/barrier obstructs view of Okimi Nursery from 6 (New), Link |
| | | | | | | | | | | 2.9 | 490 (6 New) | No - 1 residence/quad. | |
| | SW | A10 | Benedict | 53 | 6 | b,d | Yes+ | Yes | Yes | 3.8 | 320 | No - 1 residence/quad. | |
| Butter | NE | A16 | Morris | 45* | 7 | a,b,c | Yes+ | Yes | Yes | 2.2 | 425 | No - 1 residence/quad. | Loss of trees with berm |
| | SE | A16 | Whitehead | 45* | 12 | a,b,c | Yes | Yes | Yes | 2.2 | 540 | No - 1 residence/quad. | |
| | SW | A16 | Nickolau/Davis | 45* | 11 | a,b,c | Yes | Yes | Yes | 1.9 | 520 | No - 1 residence/quad. | |
| | NW | A16 | Donovan | 45* | 13 | a,b,c | No | Yes | Yes | 1.3 | 410 | No - 1 residence/quad. | |
| Book | NE | A18 | Parkin | 46 | 6 | b,c,d | No | Yes | Yes | 2.8 | 435 | No - 1 residence/quad. | Removed for R-O-W Possible technical problems with Ridge location |
| | SE | A18 | Petrie | 45* | n/a | - | n/a | n/a | - | - | - | n/a | |
| | NW | A18 | Jerome (Book) | 45* | 10 | b,c,d | Yes | Yes | Yes | 4.6 | 505 | No - 2 residences/quad. | |
| | NW | A18 | R.C. Diocese | 45* | 6 | b,c,d | Yes | Yes | Yes | 3.7 | 505 | No - 2 residences/quad. | |
| Highway 53 | SW | A20 | Reed | 54 | 6 | a,b,d | No | Yes | Yes | 0.9 | 160 | Yes | Minimal barrier cost in conjunction with bridge parapet design expected |
| | SE | A20 | Roberts | 53 | 7 | a,b,d | No | Yes | Yes | 1.8 | 260 | Yes | |

- NOTES:**
- * Assumed Ambient
 - + Berm requires agricultural land beyond minimum R-O-W.
 - a Adjacent alignment considerations (follow/parallel lot lines, avoid other residential impacts).
 - b Interchange, over/underpass requirements, connections with adjacent roads.
 - c Hydro crossing.
 - d Drainage, topographical features.

machinery movement within the Study Area, grade separations are provided at all crossing roadways of Highway 6 (New). There are no OMB road closures proposed as part of Highway 6 (New) within the Study Area. Where severances are unavoidable, access roads will be constructed to new units created where feasible. Any landlocked parcels will be purchased by the MTC and will likely be offered for resale to the adjacent owners.

In order to mitigate against the loss of agricultural land, a basic 80 m right-of-way is proposed. The Ministry of Transportation and Communications usually employs a standard right-of-way of 100 m for rural freeways. However, due to the significance of farm lands in this area, the less than standard right-of-way was employed.

6.3.3 Unity Road

This area is judged to be environmentally significant based upon:

- comments received by members of the public;
- analysis carried out by the Study Team.

Unity Road is a designated rural hamlet within the Haldimand-Norfolk Official Plan. The recommended alignment crosses Unity Road in an area which has little residential development. Only one house will be removed. The alignment crosses between the Seneca Unity School and the United Church. The Church is not actively used; services are held only once a year.

The crossing is in an area of deep cut, approximately 7-8 m. This significantly mitigates the noise and visual impacts of Highway 6 (New). Only the school experiences a noise level increase of 5 dBA or more. A structure is provided on Unity Road over Highway 6 (New) but due to the deep cut, the profile of Unity Road is not changed. As the profile of Unity Road is not changed, driveway access, pedestrian movements and traffic patterns are not affected.

Concerns were expressed over effects to wells in the vicinity of the cut. Well records were reviewed for the area, and significant impacts are not expected. Some wells may require deepening. A well monitoring program is proposed as a commitment to future work.

During the second and third series of Public Information Centres, special displays were prepared (see Appendices D and F) to illustrate

the crossing and outline its effects and the proposed mitigation. These displays were also presented to the elected representatives at the formal Council presentations. Comments received from the public and the elected representatives were generally favourable. Most people felt that, if there was to be a crossing of the hamlet, it was in the best location and the proposed mitigation measures considerably reduced the impacts to their community.

6.3.4 White Church Road Area

This area is judged to be environmentally significant based upon:

- comments received by members of the public, elected representatives and External Team members;
- analysis carried out by the Study Team.

The Township of Glanbrook Council requested continuous east-west travel on White Church Road and that development be allowed to extend south-erly to White Church Road from the Town of Mount Hope.

Transport Canada requested that the Airport Road interchange line up directly opposite the existing access to Airport Road.

Local residents were concerned over proximity impacts of Highway 6 (New) and its interchange at White Church Road.

To respond to these concerns, four options for an interchange in the vicinity of White Church Road were developed and presented to the public at a special property owners meeting and to the elected representatives at a Council presentation in March of 1986.

Based on comments received at the Council meeting and the special property owners meeting, the Study Team selected one of the interchange configurations and incorporated it into the recommended alignment. The selected interchange configuration met the concerns outlined above by:

- allowing through east-west travel on White Church Road;
- allowing development in Mount Hope to continue southerly to White Church Road;
- allowing the Airport Road interchange to line up directly opposite the existing Airport access on Airport Road;

- reducing proximity impacts to residents along White Church Road.

In addition, the interchange south of White Church Road allows for all traffic movements between existing Highway 6 and Highway 6 (New). This reduces the potential for increased traffic within the residential area of Mount Hope as local traffic will not need to use the interchange at Airport Road to travel to and from the north on Highway 6 (New).

6.3.5 Book Road

This area is judged to be environmentally significant based upon:

- comments raised by members of the public (including plot owners in the Ancaster Pet Cemetery), External Team members, and elected representatives;
- analysis carried out by the Study Team.

In Section 5 of this report, the numerous controls and constraints to the alignment of Highway 6 (New) in the vicinity of Book Road are outlined. In summary, the major factors governing the alignment of Highway 6 (New) in the vicinity of Book Road are:

- i) navigation, lighting and zoning requirements of the recently expanded Hamilton Civic Airport;
- ii) a 230 KV Hydro line which has recently been lowered at the end of Runway 12L to accommodate the Airport Zoning requirements;
- iii) the Ancaster Animal Cemetery;
- iv) an abandoned historic human cemetery (Parkin Cemetery);
- v) two historically significant houses;
- vi) several residences in the area;
- vii) several large viable farms.

Numerous meetings were held with representatives of Transport Canada and field investigations were undertaken, to determine the immediate and long-term requirements for the navigation, zoning and lighting

requirements for Runway 12L. Transport Canada required flexibility to provide for a 2,000 ft. extension of Runway 12L.

Transport Canada also requested that access be provided to a future passenger terminal to be located on the north side of the Airport on Dickenson Road. To provide access to the future terminal buildings an interchange is required on Book Road.

Meetings were held with representatives of Ontario Hydro to determine the feasibility of a crossing of the existing 230 KV line immediately south of Book Road at the end of Runway 12L. As this 230 KV line had recently been lowered to accommodate Airport zoning requirements, such a crossing was judged to be infeasible.

As part of the evaluation of alternatives to the Book Road Crossing, comments were requested from plot owners of the Ancaster Animal Cemetery. Over 200 telephone calls, telegrams and letters were received from the plot owners regarding the importance of the Cemetery. The owners were only concerned with direct impact requiring the relocation and removal of the Cemetery. Very few concerns were expressed over Highway 6 (New) being in close proximity to the Cemetery.

Based upon information provided by members of the public at the first series of Public Information Centres, field investigations were undertaken and an abandoned human cemetery was located immediately north of Book Road just west of the existing MTC designation. Subsequent analyses by the Study Team determined that the cemetery had been abandoned for some period of time and been used primarily by the Book and Parkin families.

The heritage analyses undertaken as part of the study identified two homes in the vicinity of Book Road as being of particularly historical significance as they are among the oldest residences in the area.

Meetings were held with Mr. Jerome, the owner of the farm bordering the existing MTC designation, to determine the type and extent of operation and the possible impacts of Highway 6 (New). There are some specialty crop lands used for the growing of potatoes. Lands on either side of the recommended alignment are farmed together and machinery movement between the two operations will be required.

Well records in the area were studied and although no significant impacts are expected, some wells may require deepening. A well monitoring program is proposed as a commitment to future work.

To address the concerns and constraints outlined above, three alternative alignments for the Highway 6 (New) crossing of Book Road for Alignment A were prepared and a comparative evaluation undertaken. This evaluation is documented in Section 5 of this report.

The major controls governing the selection of the recommended alignment were the requirements of Transport Canada and Ontario Hydro. The recommended alignment provides for the greatest amount of flexibility to meet the long-term requirements of both Transport Canada and Ontario Hydro while still providing for good highway geometrics.

Mitigation was incorporated into the design wherever possible. The following points are pertinent to the recommended alignment in the vicinity of Book Road:

- i) The Ancaster Animal cemetery is unaffected.
- ii) The abandoned human cemetery will be located within the ultimate interchange area but will not be relocated. Maintenance will be in accordance with the Cemeteries Act. Responsibility for maintenance will be negotiated with the Town of Ancaster. Access will be provided from Book Road and the Cemetery will be fenced.
- iii) The two historical homes are unaffected; a barn as part of one farmstead requires removal. However, the barn was built in the 1950s and has no special historical significance.
- vi) One residence is required. The owner will be compensated.
- v) Some specialty crop land is required for Highway 6 (New) and its interchange. A severance is created, however, the severed portion can be farmed in conjunction with the adjacent parcel. Machinery movements will be possible along Book Road and an access road to the severed lands will be provided from Book Road.
- vi) Transport Canada long-term requirements for the Airport are observed.
- vii) The Highway geometrics are adequate and safe.
- viii) A well monitoring program will be undertaken at the time of construction.

6.3.6 Property

This issue is divided into two subsections:

- i) Acquisitions
- ii) Proximity Impacts.

These issues were judged to be environmentally significant based upon:

- comments received by members of the public and elected representatives;
- analyses undertaken by the Study Team.

i) Acquisitions

Highway 6 (New) from Highway 403 to Caledonia is approximately 15 km in length. In total four residences are required. None of these are farmsteads or in any way agriculturally related. One lies within the urban designation of the Unity Road Hamlet, the other three are in agricultural lands. These three do not conform to existing agricultural policies regarding residential uses within agricultural areas.

The avoidance of residences was a primary objective of the route location component of this study and was a key factor in the comparative evaluation of alternatives. The recommended alignment required the least number of residences of the three alternatives crossing the Unity Road Hamlet.

One residence, within the existing MTC designation, has been purchased by MTC on a hardship basis. The remaining three residences will be obtained, preferably by negotiation on a willing seller-willing buyer basis at a fair market value prior to construction.

ii) Proximity Impacts

Concern was expressed by owners of residences whose lands would not be required for Highway 6 (New) but would remain close to the highway right-of-way.

The effects to persons in close proximity to Highway 6 (New) are difficult to quantify. Concerns usually expressed related to noise,

visual intrusion, changes to the rural environment, and increases in traffic volumes.

A detailed noise investigation was undertaken. Noise was identified as an environmentally significant issue and mitigation is addressed in Section 6.3.1.

To mitigate the visual impacts of Highway 6 (New), a visual analysis was undertaken, and existing lot lines were followed wherever possible to conform to development patterns and to avoid segmenting landscape units. The profile for Highway 6 (New) was kept as low as possible to reduce its visibility. In addition, landscaping at interchange and intersection locations will be investigated at the time of final design.

Highway 6 (New) should not significantly increase traffic volumes on most crossing roadways within the Study Area. Highway 6 (New) should, in fact, reduce traffic volumes on some municipal roadways. In particular, Airport related traffic, currently using the Fiddler's and Butter Roads should switch to Highway 6 (New). Increases in traffic will be experienced in the vicinity of interchanges.

There are no road closures proposed and thus local traffic patterns are not affected.

The Study Area is largely agricultural. Discussions held with representatives from local planning departments, regional planning departments, the Ministry of Agriculture and Food and the Ministry of Housing have indicated that the Study Area is expected to remain largely rural in nature and operation. Highway 6 (New) is not expected to significantly affect the rural nature of the area.

In addition, Highway 6 (New) generally skirts the existing urban development. The recommended alignment is in close proximity to the recently expanded Hamilton Civic Airport and to development along existing Highway 6. Therefore, although Highway 6 (New) runs through a largely rural area, it is on the fringe of existing development.

6.3.7 Vegetation (Woodlot and Forested Areas)

This issue was judged to be environmentally significant based on a request by the Ministry of Natural Resources.

Approximately 34 ha of forest, plantation and woodlot will be removed for the construction of Highway 6 (New). Of this, some 30 ha is considered to be highest quality and maturing representative woodlots. No Woodland Improvement Act agreement areas are affected. Most impacts to woodlot areas results from the location of the selected alternative along or adjacent to lot and mid-concession lines (to minimize impacts to property, agricultural areas and residences).

The selected alternative was modified to avoid fragmentation of woodlot areas where possible. During detail design, investigation will be carried out to minimize impacts of the selected alternative to wooded areas where possible. These will include consideration of:

- investigation of tree removal strategy (gradual, pre-stressed clearance);
- a survey of rare or significant plants along the right-of-way;
- construction measures to minimize impacts as a result of major cut or fill operations for significant stands of trees.

Consultation with MNR during detail design on the impacts to woodlot and forested areas will be undertaken.

6.4 **Commitment to Future Work**

6.4.1 Future Investigations to be Carried Out and Involved Agencies

As a result of the issues and concerns analyzed during the Study, the proponent has agreed that additional analysis during detailed design will be required.

A summary of these issues and the related future work commitments is shown on Table 6.4. The table also shows the agencies or groups who will be contacted during the course of these additional investigations.

6.4.2 Design and Construction Reports

Design and construction reports provide contract-specific design and construction information for compliance and monitoring purposes. They include commitments for environmental protection and monitoring at a

TABLE 6.4
SUMMARY OF COMMITMENTS TO FUTURE WORK

| <u>Issue/Concern</u> | <u>Identified as Environmentally Significant</u> | <u>Report Section</u> | <u>Future Work Proposed</u> | <u>Agencies/Groups Involved In Future Work</u> | <u>Comments</u> |
|----------------------|--|-----------------------|---|---|---|
| NOISE | Yes | 6.3.2 | Detail design noise impact evaluations to re-evaluate mitigation required, including barrier at Highway 53 | Ministry of the Environment | Mitigation to be provided based upon MTC/MOE noise protocol. |
| AGRICULTURE | Yes | 6.3.3 | Access to be provided to new farm units created where feasible Landlocked parcels to be purchased by MTC and may be offered for sale to adjacent owners | Property Owners | Standard MTC practice. |
| UNITY ROAD | Yes | 6.3.4 | Investigate advanced tree planting | Halldimand/Norfolk Board of Education | To reduce visual impacts associated with the crossing, advanced tree planting will be investigated at the time of final design. |
| WHITE CHURCH ROAD | Yes | 6.3.5 | None required | N/A | Mitigation incorporated in design. |
| BOOK ROAD | Yes | 6.3.6 | Provide access to and fence historic abandoned human cemetery (Parkin); negotiations with Town to continue responsibility for maintenance | Town of Ancaster | Cemetery Act requirements for maintenance apply. |
| PROPERTY | Yes | 6.3.7 | Obtain residences prior to construction | Property Owners | Residences preferably obtained on a willing seller, willing buyer basis at fair market value. |
| VEGETATION | Yes | 4.2.4 6.3.7 | Vegetation specialists walk the centre line of proposed R-O-W at detailed design stage to locate any significant specimens Investigate tree removal strategy | Grand River C.A. Ministry of Natural Resources | Protection of regionally rare plant species. Minimize impacts to woodlots/forested areas where possible. |
| ARCHAEOLOGY | No | 4.3.4 | Additional field surveys, documentation and appropriate mitigation of impacts to be carried out prior to construction | Ministry of Citizenship and Culture | Preliminary survey already undertaken. |

TABLE 6.4
SUMMARY OF COMMITMENTS TO FUTURE WORK
(continued)

| Issue/Concern | Identified as Environmentally Significant | Report Section | Future Work Proposed | Agencies/Groups Involved In Future Work | Comments |
|------------------------------|---|-------------------|--|--|--|
| LANDSCAPING | No | 4.3.3 | Landscaping at intersections and interchanges to be investigated at the time of final design | No further contact needed | |
| DRAINAGE/STREAM CROSSINGS | No | Appendix B | Undertake a detailed drainage study prior to construction, including extent of increase to volume and frequency of flow from storm events; appropriate mitigation to be determined Review stream crossings, fill permits and structures designs with MNR and Conservation Authority prior to construction | Ministry of Natural Resources Grand River C.A. Hamilton Region C.A. Niagara Peninsula C.A. | Preliminary drainage study undertaken. |
| WELL MONITORING | No | 6.3.3 6.3.5 | Well monitoring program to be investigated at the time of final design | Ministry of the Environment Property Owners Regional Health Unit | Preliminary review of effect to wells was undertaken. No significant impacts expected. |
| PRIVATE SEWAGE SYSTEM | No | Appendix B | Effects, if any, to individual tile beds will be dealt with in final design | Ministry of the Environment Regional Health Unit | Will be addressed, if necessary, in the Design and Construction Report. |
| WATERFOWL HABITATS | No | 4.2.5 | Measures to minimize disruption on waterfowl habitats during construction | Ministry of Natural Resources | Will be addressed in Design and Construction Report. |
| SOILS INVESTIGATIONS | No | Appendix B | Detailed soil investigation to be undertaken at time of final design | Ministry of Natural Resources | Preliminary soils investigation was undertaken. |
| SIGNING | No | Appendix B | Signing requirements to be determined at time of final design | Ministry of Tourism and Recreation | Standard MTC signing practice regarding tourism facilities will be employed. |

level of detail that is either inappropriate for, or not available in, a one-stage Environmental Assessment Report.

Design and construction reports will be submitted to the Ministry of the Environment a minimum of 30 days prior to construction. These reports will deal with concerns raised throughout the study process by External Team contacts, Internal Team meetings, and the organized public participation program.

These reports will address the commitments to further work made in this Environmental Assessment, normal environmental design practice, and any new issues identified during design.

To ensure that commitments are carried out during construction, the Ministry of Transportation and Communications has a program of environmental inspection which is undertaken throughout construction.

6.4.3 Compliance Monitoring

To facilitate compliance monitoring of the various commitments for future work and mitigating measures referenced in this assessment, compliance monitoring forms titled "Summary of Environmental Concerns and Commitments" are provided in Appendix K. Commitments and concerns arising during detail design will be documented in the Design and Construction Reports.

APPENDIX A

Relevant Correspondence/Minutes of Meetings



JUL 27 1982

Mrs. Anne H. Jones,
Chairman,
The Regional Municipality of
Hamilton - Wentworth,
119 King Street West,
P.O. Box 910,
Hamilton, Ontario.
L8N 3V9

Dear Mrs. Jones:

I very much enjoyed our meeting the other day
and I hope that the frank exchange of views was helpful
to you as it was to me.

Firstly, I would like to assure you again that
the Federal Government is fully committed to the expansion
of the Hamilton (Mount Hope) Airport, as recently announced,
at a total cost of \$48.6 million. All the budgetary provisions
have been made, planning is underway and construction will
be initiated on some projects this fall.

With respect to airport terminal facilities, the
plan is to upgrade and expand the existing building at a
cost, for the building alone, of about \$5 million. The work
includes expanding the terminal building from approximately
1170 to about 3400 square meters to permit the simultaneous
handling of both international/transborder and domestic arrivals,
provide departure facilities for two scheduled and one charter
flights at the same time, and expand the kitchen/restaurant/
bar and other concession areas. In addition, further amounts
will be spent on providing new water supply and sewage
facilities, improved power supplies, better access roads
and enlarged parking areas. I am confident that these
improvements will accommodate the substantial increase in
traffic when the expansion plan is completed.

.../2

The matter of compensation to those who live
near airports is a problem which evokes a great deal
of comment. Because the airport is there to serve the
community, the community and the transportation authority
must work together to minimize the disruption to residents
and to ensure the efficient operation of the airport. The
zoning of lands in the vicinity of airports is the res-
ponsibility of local governments, and the situation at
Hamilton once again points up the importance of municipal
and provincial governments seeing to the proper zoning of
areas surrounding airports. For its part, the Federal
Government only purchases residences on lands that are
required for the proper operation of the airport and does
not provide compensation to residents in surrounding areas.

I appreciate your support for the possible re-
direction of some of the traffic from Toronto International
Airport (TIA) to Hamilton and we will take this into account
in our planning for the Airport.

With respect to service, we anticipate a
significant improvement of carrier service following the
upgrading of the airport. In principle, the more extensive
the services, the greater the traffic and the greater the
incentive to carriers to offer yet better services. As
more services are offered at Hamilton, more travellers in
the area will regard it as a viable alternative to TIA,
especially given increased congestion at TIA and on the
access highways. The thought of Hamilton being used by
U.S. airlines is interesting, but so far no U.S. carrier
has asked for landing rights there. If any should ask, however,
I can assure you that they would be given serious consideration.

The concept of Foreign Trade Zones (FTZ) in Canada
has been examined by the Federal Government on a number of
occasions. I understand that Canada Customs in 1977
concluded that the advantages were negligible in relation
to their liabilities and as an import promoting device the
economic benefits were questionable. In a report dated
August 1978, the Standing Senate Committee on Foreign Affairs
concluded that the Canadian system of drawbacks, bonded
warehouses and special duty remissions, provided an
established, effective alternative to the FTZ. Notwith-
standing these earlier conclusions, however, I would be
pleased to have reviewed by my department any proposal put
forward by the group from Hamilton who have expressed an interest
in this concept.

.../3



Ministre
Transports Canada

Minister
Transport Canada

Finally, we discussed the need for direct highway access to the Hamilton Airport, ideally from Highway 403. I would encourage you to pursue this matter with the Provincial Government as quickly as possible. I, too, will be approaching Mr. Snow on this subject in the near future.

Once again I would like to express my pleasure in our meeting and to offer my thanks to you for your active interest in the development of the Hamilton Airport.

Yours sincerely,


Jean-Luc Pepin

The Honourable James Snow,
Minister of Transportation
and Communications,
Ferguson Block,
Queen's Park,
Toronto, Ontario.

Dear Mr. Snow:

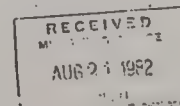
Treasury Board approval to proceed with the development of the Hamilton Airport at an estimated cost of \$48,800,000 was received on June 3, 1982. As a consequence, planning is proceeding and it is anticipated that some construction work will be initiated this fall.

Transport Canada's forecasts for the utilization of Hamilton anticipate a significant improvement of carrier service following the upgrading of the airport. It is my department's view that the more extensive the services, the greater the traffic and the greater the incentive to carriers to offer yet better service. With more services being offered at Hamilton, more travellers in the area should regard it as a viable alternative to Toronto International Airport (TIA), especially given the forecast increase in airside delays at TIA, and the increased traffic on the access highways.

So as to exploit the full potential of the Hamilton Airport, it is essential that the road access be improved, not only for passengers from the City of Hamilton itself, but also from other cities and municipalities in the Hamilton-Niagara-Brantford area. Clearly, one of the most effective improvements would be to provide direct access to the Hamilton Airport from Highway 403.

AUG 17 1982

Place de Ville
Ottawa
K1A 0N5



...../2

I would be grateful if your Ministry could review its plans for road construction in the Hamilton/Niagara Peninsula area with a view to ensuring that direct highway access is available to the Hamilton airport upon its upgrading. I understand that Regional and Municipal officials also favor early action and undoubtedly will be raising the matter with you.

Kindest personal regards.

Yours sincerely,



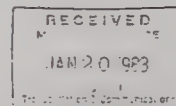
Jean-Luc Pepin



Ministre
Transports Canada

Minister
Transport Canada

Place de Ville
Ottawa
K1A 0G5



The Honourable James Snow
Minister of Transportation and Communications
Ferguson Block
Queen's Park
Toronto, Ontario

Dear Mr. Snow:

Thank you for your letter of October 5, 1982, in which you outlined Provincial plans for the provision of road access to Hamilton Airport.

The construction of a partial interchange at Fiddler's Green Road and Highway 403, to coincide with Regional road improvements and federal airport expansion plans, will provide, I feel, an acceptable interim measure to enhance surface access to the Hamilton Airport.

With respect to long-term development of the Hamilton airport, I would like to reiterate the views of my Department that, should air traffic activity at Hamilton increase as forecast, it will be necessary to further improve road access to the airport by construction of the proposed new Highway 6 corridor to ensure that direct highway access is available to the airport. I hope that you keep this in mind when considering plans to upgrade the highway system in the period subsequent to the completion of the Hamilton airport expansion project.

Best wishes for a very happy and productive 1983.

Yours sincerely,



Jean-Luc Pepin



Ontario

Ministry of
Transportation and
Communications

Telephone No: 224-7537

Central Region,
5000 Yonge Street,
Willowdale, Ontario.
M2N 6E9

January 27, 1984

Mr. L. Franco,
Secretary,
Engineering Services Committee,
The Regional Municipality of
Hamilton-Wentworth,
Department of Engineering,
71 Main Street West,
Hamilton, Ontario.
L8N 3T4

Dear Mr. Franco,

Re: Road Access to the Hamilton
Civic Airport

We have examined your brief, titled "Road Access to the Hamilton Civic Airport", submitted to us under covering letter dated December 27, 1983. We wish to take this opportunity to submit our comments for your information and consideration.

Highway 6 New is envisaged as a controlled access freeway, linking the Hamilton area with the Nanticoke industrial area at Lake Erie. The construction of this facility can be considered as a long range proposal, with the exception of the Caledonia Bypass, which was constructed in 1983 as a two lane facility.

Following the 1976 Feasibility Study, a designation plan was laid down on Highway 6 New, from Highway 403 to Book Road in the vicinity of Lots 45 and 46 (PDR Figure 5.1), a copy of which is attached. This designation was intended to protect for a connection to Highway 403 in the event that a Route Planning Study confirmed such a location. A recent review of this Study indicated that the level of effort contained therein is not sufficient to satisfy the current requirements of the Environmental Assessment Act for the purpose of designating a route.

cont'd/...2

Mr. L. Franco

-2-

January 27, 1984

Your interest that the alignment should be finalized in order to properly address concerns related to airport access from the west, to property issues in the immediate vicinity of the airport, and to general development pressures in the area is shared by this Ministry. Accordingly, we are proposing an extensive Environmental and Route Planning Study to define a route between Highway 403 and Caledonia which can be designated. It is anticipated that this Study will be initiated later this year and that appropriate input from the Regional Municipality of Hamilton-Wentworth will be solicited during the course of this Study. Although it is anticipated that during the course of this Study we will investigate the possibility of staging construction to service the airport, it should be pointed out at this time that the staging of construction will depend on the extent of development and traffic growth in the area. Based on current projections, the warrants for this facility will not develop for some time. However, we intend to monitor the situation on a relatively ongoing basis.

Upon completion of the Study, it is anticipated that we will designate the final route of Highway 6 New between Highway 403 and the Caledonia Bypass. Should this Study indicate that construction will not commence for some time, property acquisition would only be considered on a hardship case basis, as well as on a willing buyer-willing seller basis.

I trust that these comments will be of some assistance to you. We look forward to your participation in this Study.

Yours truly,

E.J. McCabe, P. Eng.,
Regional Director.

cc: Messrs. A.G. Kelly
P.D. Billings
A. Wittenberg
L. Dutchnak
B. Ogden
P. Shaver

Attach.

EJMcC/PS/phw

Ministry of
Transportation and
Communications

Tel: 224-7661

Planning and Design
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

October 1, 1984

See Attached List

Re: Commencement of a Route
Planning/Preliminary Design Study
Highway 6 New, Hamilton to Caledonia
W.P. 36-84-00

The Ministry of Transportation and Communications has initiated a route planning/preliminary design study to determine the alignment of Highway 6 New between the Hamilton area and Caledonia (see attached study area map).

M. M. Dillon Ltd., Consulting Engineers and Planners have been retained by this Ministry to carry out this study. The study will conclude with the preparation and submission of an Environmental Assessment Report - One stage submission to fulfill the requirements of section 5 (3) of the Environmental Assessment Act, R.S.O. 1980.

A municipal technical team of potentially affected local and regional municipalities will be established. It is our intent to carry out a pre-submission consultation program to provide an opportunity for the municipal technical team:

- to review and comment on the study design developed for the project;
- to identify "environmentally significant areas/issues" in the study area;
- to be aware of the progress of the study and findings at various stages of the study, for example, through:
 - project initiation;
 - data collection and analysis;
 - development of alternatives;

- evaluation of alternatives;
- proposed route alignment/development of mitigation measures;
- to provide continued input to the study.

During the study, we request that your technical representatives maintain a regular liaison with your municipal council members to keep them informed of the general progress of the study. We are prepared to meet with Council to discuss issues of specific concern and make presentations at key points of the study for councils review and approval. These key points will be discussed with you upon completion of the study design.

As a member of the municipal technical team for this project, you will be contacted by our consultant in the near future regarding an initial meeting to introduce the study and discuss the study design. In preparation for this meeting, would you please advise the undersigned of the name of the person who will co-ordinate the input from your municipality.

Thank you in advance for your co-operation.

Yours truly,



Peter B. Shaver
Project Manager

FBS:bl

Attach.

C.C.
E. Gaden
I. Williams
H. McNelly
A. Wattenberg
L. Dutchak
M. Johnston - Clerk, Haldimand-Norfolk
J. Gallipeau, Clerk, Hamilton-Wentworth
S. Troubridge, Clerk, Town of Haldimand
C. Switzer, Clerk, Township of Glanbrook
L. Hayden, Clerk, Town of Ancaster
E. Simpson, Clerk, City of Hamilton

Regional Municipality of Hamilton-Wentworth
Box 910, 119 King Street West
Hamilton, Ontario
L8N 3V9

Attention: J. Leach, Commissioner of Engineering

City of Hamilton
71 Main Street West
Hamilton, Ontario
L8N 3T4

Attention: R. A. Morden, Director of Works

Town of Ancaster
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

Attention: B. Weatherley, Director of Works

Township of Glanbrook
Box 130, 3027 Homestead Drive
Mount Hope, Ontario
L0R 1W0

Attention: R. Ferguson, Engineer/Road Works Superintendent

Regional Municipality of Haldimand-Norfolk
70 Town Centre Drive
Townsend, Ontario
N0A 1S0

Attention: Wm. C. McDowell, Commissioner of Engineering

Town of Haldimand
45 Munsee Street
Cayuga, Ontario
N0A 1E0

Attention: B. M. Edwards, Engineer/Road Works Superintendent



STUDY AREA

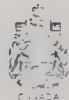


Ministry of
Transportation and
Communications

HIGHWAY 6 (NEW) HAMILTON TO CALEDONIA

ROUTE LOCATION AND PRELIMINARY DESIGN STUDY

Minister of Transport



Ministre des Transports

- 2 -

The Honourable Ed Fulton, M.P.P.
Minister of Transportation and Communications
Ferguson Block
Queen's Park
Toronto, Ontario
M7A 1A2

APR 9 1986

7341



My dear Colleague:

The Federal Government, the Regional Municipality of Hamilton-Wentworth, and the City of Hamilton have identified that the poor regional access to the Hamilton Airport may be an impediment to future utilization of the facility.

The airport is currently being actively marketed by both Transport Canada and the Regional Municipality of Hamilton-Wentworth. Negotiations have, and are continuing to take place with air carriers offering scheduled charter, and air cargo services out of Hamilton Airport.

The completion of the Fiddler's Green Road interchange and the Butter road extension have enhanced airport access, however, this could be viewed as an interim measure only.

Improvements to the regional road network to provide connections to the Provincial freeway system might also be considered, in particular, the construction of Highway No. 6 (New) from Hamilton to Caledonia. The provision of regional access to Hamilton Airport would be a beneficial instrument for increasing the utilization of the airport.

Your consideration of possible improvements to highway access to the airport would be appreciated. Would you please advise of any plans you may have in this regard.

I want to assure you that I share your concern for greater use and improved air services to Hamilton's airport. As evidence, you may be aware that last year Transport Canada awarded a contract to Macavia Aviation Consultants, to undertake a study analysing the feasibility of greater use of the airport, with a view, as well, to alleviating some of the pressure at Lester B. Pearson International Airport (Toronto). The study has now been completed and I enclose a copy, for your information.

I note your interest in having Hamilton Civic Airport designated as an underutilized airport so that air carriers can operate domestic and transborder air services from that airport with the same freedom afforded to carriers serving Montréal International Airport (Mirabel). In the transborder context, entry to Mirabel Airport and San Jose Airport in California is considerably relaxed as a result of agreements negotiated with the United States to establish two "experimental programs". I do not intend to propose revisions to those agreements or to add Hamilton and another U.S. airport because both countries are now preparing for broadly based negotiations aimed at revising the existing Air Transport Agreement.

I might add for your information, however, that a separate agreement aimed at facilitating services of a regional, local and commuter nature is in place and a few Canadian and U.S. carriers have taken advantage of the opportunities it provides.

With respect to domestic air transportation, I also wish to point out that the position paper entitled "Freedom to Move - a framework for transportation reform", released in July 1985, puts forward specific proposals of the Government of Canada for economic regulatory reform in the transportation sector. The government is proposing to reduce economic regulation to a minimum while remaining strongly committed to enforcing air safety. Under these proposals, entry to any class of domestic commercial air service will be governed by only a "fit, willing and able" requirement. One of the key objectives of this approach is to encourage innovation, enterprise and increased competition. I hope this will provide carriers with the incentive to use Hamilton Civic Airport's improved facilities.

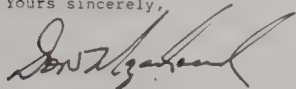
.../3

.../2

It's our year! C'est notre année!
en motion...en touch en mouvement...au courant

I trust that the foregoing assures you of my personal interest in the growth of Hamilton's airport. Thank you for providing a copy of the air travel survey undertaken by your department, and making known your views on the development of Hamilton Civic Airport.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "Don Mazankowski", with a stylized, flowing script.

Don Mazankowski

Enclosure

Ministry of
Transportation and
Communications

Ferguson Block
Queen's Park
Toronto, Ontario
M7A 1Z8
416-965-2101

The Honourable Don Mazankowski
Minister of Transport
Transport Canada Building
Place de Ville
330 Sparks Street
Ottawa, Ontario
K1A 0N5

Dear Mr. Mazankowski:

Thank you for your letter of April 9, 1986, concerning the utilization of the Hamilton Airport and our future plans for improving highway access.

The issue of future access to the Hamilton Airport was a major consideration in the initiation of the Highway 6 (New), Hamilton to Caledonia route planning study. During the course of the study, extensive liaison with Transport Canada staff was undertaken to ensure that the proposed facility satisfies future access requirements for the Hamilton Airport. We expect to formally submit our Environmental Assessment Report to the Ministry of the Environment later this year. If approvals are received, the Ministry of Transportation and Communications will then designate the corridor as future controlled access highway.

At present, Highway 6 New is not on the Ministry's capital construction program, and no time frame has been established for construction. As you have noted, the Fiddler's Green Road interchange and Butter Road extension currently provide interim access to the Hamilton Airport. My Ministry will be closely monitoring traffic flows and the access situation and will be prepared to move the scheduling forward when conditions warrant it.

I have noted that you do not intend to propose to the United States that Hamilton (and presumably a U.S. airport) be added to the experimental program which has resulted in the Montreal (Mirabel) and San Jose Airports being designated as underutilized. You state that this unwillingness stems from the fact that both countries are now preparing for broad negotiations to revise the existing air bilateral agreement. This position is a disappointment to me and, I am sure, to the citizens of Hamilton and its surrounding area as well.

Discussion with the United States with respect to major air bilateral revisions have been ongoing since late 1979. In other words, in more than six years, there has been little progress made and yet, during that time, the Hamilton Airport has undergone a major "facelift" as a result of federal government expenditures. The regional/local/commuter agreement to which you refer has, unquestionably, been a step in the right direction insofar as new short-haul services are concerned. However, it is not surprising that Hamilton, with its metropolitan population in excess of 500,000 people, has not benefitted to any significant extent when one considers that potential new air routes to the U.S. from Hamilton would be those to cities south of the border with populations in excess of 1,000,000 people. In other words, discretionary approval by both countries is required before such routes to/from Hamilton can be commenced and I would think this requirement in itself is sufficient to deter a number of carrier applicants.

With respect to access to the Hamilton Airport being a possible impediment to future utilization of the facility, may I note that our survey regarding use of the airport indicated that provision by airlines of convenient departures and nonstop services were given as major improvements required for use of the Hamilton Airport.

I trust the foregoing clarifies this Ministry's position regarding the utilization of the Hamilton Airport. Thank you for sharing your concerns and sending me a copy of your study report.

Yours sincerely,

Ed Fulton
Minister

EF/PS/aw

cc: Minister's Office
M.P.P. File (2)
Deputy Minister's Office
B.D. Riddell
P.D. Billings
J.E. Gleason - Air Office

A. Wittenberg
L. Dutchak
P. Shaver



P.O. Box 400
CAYUGA, ONTARIO
NOA 1E0

Town of Haldimand

P.O. BOX 400
CAYUGA, ONTARIO NOA 1E0

PHONE 772-3324

The Regional Municipality of HALDIMAND-NORFOLK



REGIONAL ADMINISTRATION BUILD.

70 TOWN CENTRE DRIVE
TOWNSEND, ONTARIO NOA 1S0
TELEPHONE: (519) 587-4911

OFFICE OF THE CLERK
MRS. M.L. JOHNSTON, A.M.C.T., C.

April 3, 1986

April 2nd, 1986.

Mr. Peter B. Shaver,
Project Manager,
Planning & Design Office,
Ministry of Transportation and
Communications,
5000 Yonge Street,
Willowdale, Ontario.
M2N 6E9

Dear Mr. Shaver:

Please be advised that the following resolution was passed
by the Council of the Town of Haldimand on March 24th, 1986:

"THAT the Town of Haldimand supports, in principle,
the preliminary design of the recommended alignment
for Highway 6 (New) from Highway 403 to the Caledonia
By-Pass."

Yours truly,

Norman Smyth
per j.s.

Norman E. Smyth, A.M.C.T., C.M.C.
Clerk

NES/jl

Peter Shaver, P. Eng.
Project Manager
Planning & Design Office
Ministry of Transportation & Communication
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Sir:

RE: Regional Council Session
March 27th, 1986

This letter will serve to advise you that on recommendation
from the Engineering Committee Meeting of March 20th, 1986, Regional Council
at their regular session of March 27th, 1986 endorsed the following motions:

"That the Regional Municipality of Haldimand-
Norfolk supports, in principle, the preliminary
design of the recommended alignment for
Highway 6 (New) from Highway 403 to the
Caledonia By-Pass."

"The Regional Municipality of Haldimand-
Norfolk enter into negotiations with M.T.C.
regarding the assumption of existing
Highway 6 from Townline Road to Green's
Road."

If you require further information regarding the foregoing,
please contact the Engineering Department.

Yours truly,

OFFICE OF THE REGIONAL CLERK

SB:lg

p.c.: Engineering Dept.

Sylvia M. Bittman
(Mrs.) Sylvia M. Bittman, A.M.C.T.
Deputy Clerk

TOLL FREE LINES: WATERFORD 443-8913

CAYUGA 772-3571 • DELHI 582-3620 • SIMCOE 428-0020

April 7, 1986 No.: 13

MOVED BY:

SECONDED BY:

April 8, 1986

Ministry of Transportation
and Communications
5000 Yonge Street,
Willowdale, Ontario
M2N 6E9

Attention: Peter B. Shaver

Dear Sir: Re: Hwy. #6 (new) Alignment

Please find enclosed a certified copy of a
resolution passed by the Council of the Township
of Glanbrook supporting in principle the
preliminary design of the recommended alignment
(Route 1) for the Hwy. #6 (new) route location.

Yours very truly,

Craig Switzer

CRAIG SWITZER, Clerk.
encl.

CS/lbt

THAT WHEREAS the Council of the Township of Glanbrook has
studied and reviewed on site the four alternate proposed
routes which pass through Glanbrook Township.

THEREFORE BE IT RESOLVED that the Council of the Township of
Glanbrook supports in principle, the preliminary design of
the recommended alignment (Route 1) for Highway #6 (new)
from Highway 403 to the Caledonia By-pass.

The construction of Highway #6 (new) will require closing
and realigning a section of White Church Road between
Highway #6 (existing) and Glancaster Road.

YEAS

Mayor Bell
Councillor Johnston
Councillor Etherington
Councillor MacIntyre

NAYS

Councillor May
Councillor Mitchell

CERTIFIED TO BE A TRUE COPY

Craig Switzer
CLERK

Robert Bell
Mayor.

TOWN OF ANCASTER

Mayor R E Wade and Members of
Ancaster Town Council

Report # 601

Coordinator-Engineer's Report

May 9, 1986

Mayor Wade, Members

- i Recently a delegation of Mr J Horton, representing M M Dillon Limited and Mr P Shaver, representing M T C., requested Council to approve the following resolution :

"The Town of Ancaster supports, in principle, the preliminary design of the recommended alignment for Highway 6 (New) from Highway 403 to the Caledonia By-pass.

At such time as MTC acquires the lands surrounding the Parkin Cemetery or Book Road and provides suitable access to Book Road, the Town will provide maintenance in perpetuity.

The construction of Highway 6 (New) will require closing and realigning a section of Butter Road between Fiddler's Green Road and Glanaster Road."

We have reviewed the proposal, discussed it with the M T C representatives and would report as follows :

There is at present no timing schedule for construction of this proposed Highway 6 alternate route, but the M T C would like to finalise the design, location, etc., so that when funds become available property acquisition could commence and eventually construction, in phases, proceed.

It has been suggested the first phase would probably provide access from Highway 403 to the airport. It would probably be constructed with an interchange at Highway 403, but simply grade crossings with a two lane arterial road southerly to the airport access. Eventually the two lane arterial road would be extended southerly to join with the by-pass presently existing around Caledonia. When traffic volumes warrant it, interchanges and fly over bridges would be constructed on other roadways, and the road would be converted from arterial to a controlled access highway.

There is no timing schedule for any of the above as no funds have been available and it would be dependant on traffic volumes and presumably airport use.

At Highway 403 a bridge would be constructed over 403 and all traffic movements in all directions would be possible at this interchange. It would appear in this area, that certain sections of land presently frozen, would not be needed for the roadway construction and could be released.

At Highway 53 it is proposed that Highway 6 would go over 53 Highway on a bridge. The only interchange possible is traffic on 53 Highway can go northerly and proceed easterly on Highway 403 and traffic west bound on 403 could turn southerly to enter Highway 53. At this location however, the Reed residence would eventually be 49 metres from the main pavement and the Roberts residence 52 metres. Because Highway 6 will be going over Highway 53 on a bridge, it would be difficult to construct noise walls effectively to reduce traffic noise to acceptable levels on these two properties due to this new construction when it takes place. Houses in Harmony Hall and Mohawk Meadows are however approximately the same distance from the pavement of Highway 403. When Highway 403 was built noise reduction was not considered as important an item as it is now and no noise walls were constructed adjacent to the subdivisions.

We have asked the M T C to construct noise walls but they indicate they are on a list of numerous other areas, which qualify for noise walls when funds become available.

If the properties are left at present they may be be injuriously affected by the noise levels, to the extent that property values would decrease. If that is the case then these owners are bearing the total cost of this reduction themselves for a project constructed by the Ontario Government to benefit the people of Ontario. It appears to us a much more reasonable attitude to obtain appraised values on the properties, offer to purchase them at the appraised value from the owners, and if purchased then re sell the properties with the information available as to what is to be constructed. Anyone purchasing that property then knows what to expect. If there is a small reduction in monies between the purchase price and the selling price then all the people of Ontario bear that cost rather than the two individual owners.

At Book Road, an interchange would be constructed so that all movements between Book Road and Highway 6 would be possible. Eventually this may become the main access to the airport if and when the present terminal is moved to the north side of the airport, although we would anticipate this being quite a long time in the future if it does happen.

Book Road would be raised to go over Highway 6 on a bridge structure and would be approximately 23 feet above the existing grade similarly to all bridges along the proposed route.

The proposal for the bridge structure is considerably west of the present designation, and therefore land presently frozen for this bridge adjacent to Book Road could be released as it would not be needed for the present alignment.

Inside this interchange would be the old Parkin Cemetery which is a considerable height above Book Road, and will be a considerable height above the Highway 6 main highway and the on/off ramps. It may require retaining walls to maintain this old cemetery. It is a private cemetery and we understand that no one has been buried there for many years. The only access to it is presently through the farm lane and the farmer's crops.

In the M T C request, they ask that the Town agree to take over and maintain this cemetery, however I believe this should be subject to negotiations with the M T C, as to how the cemetery would be left, the access to it, the fencing around it, etc. The Provincial Cemeteries branch would like the Town to take over this cemetery which would be an added cost to the Town taxpayers and as we understand, very little benefit to anyone as no one has maintained this cemetery and it is overgrown with weeds and long grass.

At Butter Road a bridge would be constructed on Butter Road south of the present Butter Road alignment by approximately 35 metres so that Butter Road will cross Highway 6 at right angles as there is a slight angle on Highway 6 at this point. There will be no interchange between the road and Highway 6. At this location the Donovan house is approximately 76 metres away from the eventual main pavement on Highway 6 which is a reasonable distance from the pavement but there will be a large ramp up to the bridge constructed in front of the property, which may not necessarily be unpleasant as it will be landscaped but it will certainly have some effect on the property. It could also act as a noise trap and create reverberations from the Highway. The actual noise effect and visual effect of this might not be entirely known until the highway is finally constructed, but I think it reasonable to consider this property also being purchased and resold if the owner wished to sell to ensure that all Ontario bore the depreciation in property value as opposed to one owner. It is quite possible that someone else looking at that property might very well pay as much as the appraised value and buy at that so there was really no loss to the M T C, but this would not be known until it actually had taken place.

Glancaster Road would have a bridge constructed on it over Highway 6 and no interchange for traffic would be at this intersection when the road was constructed as a freeway.

The main access to the airport would be an interchange constructed south of the present airport entrance would allow traffic to turn off Highway 6 at the interchange to go directly north to the airport. There would however be a grade interchange between this roadway and Airport road, at the entrance to the airport.

The alignment of the highway appears to be a reasonable one, a serious attempt has been made to reduce the effect on splitting of properties where possible, and to affect as few homes as possible in the construction. The grades used for the proposed highways and ramps appear reasonable. The grades proposed for the bridges that will be constructed on Book Road, Butter Road and Glancaster Road are reasonable grades. There would not appear to be any particularly large drainage problem associated with the construction and these would be dealt with in the final details of the design and I would not anticipate any serious problems in ensuring that drainage of the property is satisfactory.

There are some access ramps along the highway proposed which would cut through existing properties, and in some cases not be a large distance from an existing house. However it would be I think, fair to anticipate that the M T C would have to offer a price for the

Coordinator-Engineer's Report # 601..../4

May 9, 1986

additional property needed that the owner would consider reasonable and accept, or alternatively if the owner refuses, expropriation procedures would protect the value of the owner's property, setting the amount that had to be paid by the M T C to the owner for the property they needed from him for the access ramp.

We would therefore recommend as follows :

That tentative approval be given to the proposed alignment for Highway 6.

That the Reed, Roberts and Donovan properties be purchased and resold to ensure that those owners are not being required to accept a disproportionate share of the cost of constructing this highway.

That property presently frozen for the proposed Highway 6 be released where it is apparent it is not needed.

That acquisition of property required for the Highway 6 construction be proceeded with by the M T C.

That Council would consider closing a portion of Butter Road so that it could be realigned in accordance with these proposals subject to negotiations between the M T C and the Town, providing for protection of adjacent properties and suitable construction detail.

Construction of a watermain has commenced on Scenic Drive between Mohawk Road and the entrance to Scenic Woods Subdivision. The Region has authorised the contractor to close the roadway with no lane of traffic to be provided for access between the subdivision and Mohawk Road. Our Fire Department have worked out what appears to be a reasonably effective procedure with the Hamilton Fire Department to provide for fire protection for the subdivision as the detour route is a long tortuous route from Ancaster to get to the subdivision entrance. Hamilton Fire Department will respond to all calls in the subdivision until such time as Ancaster Fire Department can get round the detour and get to the subdivision to eventually take over the fire fighting required. Ambulance calls from the Province will be directed to the ambulance in Hamilton on Mohawk near James Street and that will take somewhat longer to provide ambulance service.

We have had a number of complaints from residents and builders about the difficult access to the subdivision and have suggested to the Region that they should require the contractor to keep one lane open on a road which has such a tortuous detour from Highway 403, Ancaster and Mohawk Road.

The final day of the court case of the Town's charges against the owner who has blocked the 30 inch steel culvert under Sulphur Springs Road with concrete was heard on Tuesday, this week, and the Judge indicated that he would render a decision on the 25th June, on these charges.

..../5

Fifteenth Meeting (cont'd.)

May 12, 1986.

Seconded by Councillor Ziolkowski

That the report of the 17th Committee of the Whole meeting of April 28, 1986, and the report of the 18th Committee of the Whole meeting of May 5, 1986, be adopted as printed and circulated.

CARRIED.

Accounts

Motion No. 3

Moved by Councillor Sloat
Seconded by Councillor Brennan

That the action of the Treasurer in paying the accounts for the month of April, 1986, in the total amount of \$1,268,163.94, be ratified.

CARRIED.

Coordinator-Engineer's Report #601 dated May 9, 1986

Hwy. 6 (New) Corridor Study

Motion No. 4

Moved by Councillor Ferguson
Seconded by Councillor Zsiros

That, as recommended in the Coordinator-Engineer's report dated May 9, 1986,

- (a) tentative approval be given to the proposed alignment for Highway 6,
- (b) the Reed, Roberts and Donovan properties be purchased and resold to ensure that those owners are not being required to accept a disproportionate share of the cost of constructing this highway,
- (c) property presently frozen for the proposed Highway 6 be released where it is apparent it is not needed,
- (d) acquisition of property required for the Highway 6 construction be proceeded with by the M.T.C., and
- (e) Council would consider closing a portion of Butter Road so that it could be realigned in accordance with these proposals subject to negotiations between the M.T.C. and the Town, providing for protection of adjacent properties and suitable construction detail.

CARRIED.

Balance of the Coordinator-Engineer's Report #601 dated May 9, 1986

Motion No. 5

Moved by Councillor Ferguson
Seconded by Councillor McKeon

That the balance of the Coordinator-Engineer's report dated May 9, 1986, be received.

CARRIED.



Ontario

Telephone: (416) 224-7578

Ministry of
Transportation and
Communications

Planning and Design Section
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

May 27, 1986

Mr. R.G. Morrow, P. Eng.
Coordinator-Engineer
Town of Ancaster
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

| | |
|----------|--|
| RECEIVED | |
| 20 5 86 | |
| SECN | |
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| | |
| | |

Dear Mr. Morrow:

Re: Highway 6 (New), Hamilton to Caledonia
W.P. 36-84-00
Parkin's Cemetery, Book Road, Ancaster

This will confirm our telephone conversation of May 26, 1986.

Upon receiving a copy of Ancaster Council resolution dated May 12, 1986, and a copy of your May 9, 1986 report to Council, both with regard to Highway 6 (New) study, I was surprised to see that our request concerning the Parkin Cemetery on Book Road was not included in the resolution.

It is my understanding, based on my contact with Mr. Paul Harrison, Head of the Ancaster Cemetery Board, that the Town of Ancaster currently has the responsibility for maintaining the Parkin Cemetery, as it is considered an "abandoned" cemetery. I believe that at present, the Town is unable to provide this maintenance due to a lack of access.

As indicated to Mr. Harrison and also to members of Council present during my brief presentation at its Committee of the Whole meeting of April 14, 1986, the Highway 6 (New) Study Team recognizes the importance of the Parkin (also known as the "Book") Cemetery to the Town's heritage and wishes to ensure that the municipality continues to assume its current responsibility for maintaining the cemetery. To this end, the Ministry is willing to transfer ownership of the actual cemetery area to the Town and to provide a legal access from Book Road for maintenance purposes, once the property for the interchange requirements is obtained. As part of the normal right-of-way procedures, this property would be fenced to prevent direct access to the surrounding M. T. C. lands.

Mr. R.G. Morrow, P. Eng.

- 2 -

May 27, 1986

We would appreciate receiving from the Council a new resolution, or an amendment to the resolution of May 12, 1986 which recognizes the request concerning the cemetery and concurring with it.

Please feel free to contact me if you have any questions.

Yours truly,

A. Jay Nuttall

A. Jay Nuttall
Environmental Planner

AJN/bss

cc: P. Harrison
A.V. Hayden - Ancaster Town Clerk
P. Shaver
I. Williams (M.M. Dillon)



Ontario

Ministry of
Transportation and
Communications

Telephone No: 224-7661

Planning and Design Section
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

May 28, 1986.

- 2 -

Town of Ancaster
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

Attention: L. V. Hayden, A.M.C.T.
Town Clerk

Dear Mr. Hayden:

RE: Highway 6 (New) Hamilton to Caledonia
-W.P. 36-84-00

We have received your letter of May 20, 1986, with the accompanying resolution (May 12, 1986) and Coordinator Engineers Report (May 9, 1986). We would like to thank members of Council for their deliberation and for their resolution approving the recommended alignment.

In reviewing Clause (a) of the Resolution, we would like to request that the text be modified to correspond to our original recommended wording, namely:

"The Town of Ancaster supports, in principle, the preliminary design of the recommended alignment for Highway 6 (New) from Highway 403 to the Caledonia By-pass.

At such time as MTC acquires the lands surrounding the Parkin Cemetery or Book Road and provides suitable access to Book Road, the Town will provide maintenance in perpetuity.

The construction of Highway 6 (New) will require closing and realigning a section of Butter Road between Fiddler's Green Road and Glanaster Road".

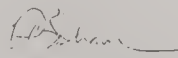
The present wording of Clause (a) refers to "Highway 6", rather than "Highway 6 (New)", which may result in confusion with existing Highway 6. It is desirable that the location of Highway 6 New be more specifically set out, as in the suggested wording, since this resolution will be incorporated into our upcoming Environmental Assessment Report.

With respect to clauses (b) through (e) we recognize Councils concerns, and will respond to those issues following receipt of your modified resolution. It should be noted that in clauses (c) and (d), the wording should also be changed to replace "Highway 6" with "Highway 6 (new)".

In this same resolution, no mention is made of the Parkin or Book Cemetery and our request that the Town of Ancaster provide maintenance in perpetuity once the MTC acquires the surrounding land and provides suitable access to Book Road. This should also be included in your resolution. It is our understanding that the Town of Ancaster is presently responsible for maintenance and hence this would be a continuation of the existing jurisdiction.

In summary, we would like to thank Council for their support, and trust that the requested modifications to the resolution are satisfactory. We look forward to receiving a revised resolution as soon as possible. If you require any clarification of the preceeding, please contact the undersigned.

Yours truly,


P. B. Shaver, P.Eng.
Project Manager

PBS/pfk.

June 2/86
Copies to Members of Council
K. G. Frankow



THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4 (416) 526-4170

ID#0011D(31)

RECEIVED

June 18, 1986

JUN 20 1986

M. M. Dillon Ltd.
P.O. Box 1850
Station A
Willowdale, Ontario
M2N 6H5

M. M. DILLON LTD.
TORONTO OFFICE

Att: J. Horton

Re: Hwy. 6 (New) - Hamilton to Caledonia

Gentlemen:

The Engineering Services Committee at its meeting of June 9, 1986 considered a report from the Commissioner of Engineering and correspondence from the Town of Ancaster regarding Highway 6 (New) Hamilton to Caledonia.

After considering the report and correspondence, the Committee recommended to Regional Council that:

29. That the Ministry of Transportation and Communications be advised that the Region of Hamilton-Wentworth concurs in principle with the proposed alignment of Hwy. 6 (New) from Hwy. 403 to the Caledonia By-pass.

Regional Council at its meeting of June 17, 1986 approved the Committee's recommendation.

L. Franco, Secretary
Engineering Services Committee

:jr

Refer to File No. T112-17
L. Franco
Attention of
Your File No.

| | |
|-------------------|-----------|
| M. M. DILLON LTD. | |
| DATE REC'D | |
| FILE NO. | 9576-1/15 |
| FILE | FILE |



TOWN OF ANCASTER

300 WILSON STREET EAST, ANCASTER, ONTARIO - L9G 2B9 - TELEPHONE 648-4401

RECEIVED July 31 1986

AUG 7 1986

M. M. DILLON LTD.
TORONTO OFFICE

Mr. P. B. Shaver, P.Eng.,
Project Manager,
Planning and Design Section,
Central Region,
Ministry of Transportation and Communications,
5000 Yonge Street,
Willowdale, Ontario.
M2N 6E9

Dear Sir:

Re: Highway 6 (New) Hamilton to Caledonia -
W.P. 36-84-00

Enclosed is a copy of that part of the June 20, 1986 report of our Coordinator-Engineer, Mr. R. G. Morrow, and attachments, respecting the above-noted subject (Item 2). This report was prepared in response to your letter of May 28, 1986 and the letter from your Environmental Planner, Mr. A. Jay Nuttall, dated May 27, 1986. Also enclosed is a copy of that portion of the report of the 26th Committee of the Whole meeting of Council of June 23, 1986, setting out the action taken by Council on this matter.

Your response to clauses (b), (c) and (d) of Council's resolution of May 12, 1986 is appreciated.

Yours very truly,

G. A. Folland

(Mrs.) G. A. Folland, A.M.C.T.,
Deputy Clerk.

gf
Encls.

cc: Mr. J. P. Horton, P.Eng.,
M. M. Dillon Limited
Mr. A. J. Nuttall, M.T.C.

Regional Municipality of Hamilton-Wentworth
- Regional Clerk
- Commissioner of Engineering

| | |
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| M. M. DILLON LTD. | |
| DATE REC'D | |
| FILE NO. | 9576-1/15 |
| FILE | FILE |

- 2 Recently representatives of the Ministry of Transportation and Communications attended at Council and requested Council approval of the alignment of the proposed new Highway 6 through Ancaster. At that time Council requested a report and I am attaching a copy of my report, together with Council's resolution that was forwarded to the M T C.

Subsequently to the M T C receiving this, Mr P Shaver has forwarded us additional instructions as to the wording of the resolution he would wish Council to pass.

I would suggest that consideration be given to amending our resolution to insert the word "new" after the words "Highway 6" in Council's resolution sections (a) (c) and (d). However I would not recommend that we alter Section (e) to comply with their request.

In my report I had suggested that the taking over of the cemetery be subject to negotiations with the M T C as to how this cemetery would be left, the access to it, fencing around it, etc. which leaves the Council considerable freedom to negotiate for suitable reconstruction of this overgrown cemetery before taking it over and maintaining it at the taxpayers expense. The cemetery will likely be approximately 22 feet above surrounding roadways and may very well require retaining walls as well as extensive renovating, fencing and good access before the Town should agree to take it over.

Mayor R Wade suggested he would like to see some indication that the Town would take over the cemetery and we have discussed a resolution alteration that would indicate the Town would take it over subject firstly to obtaining detailed plans, satisfactory to Council, showing what was to be done to the cemetery before the Town accepted it from the M T C, who have yet to purchase it. If Council deem that appropriate then a clause could be added to the resolution to that effect.

Council might also or alternatively ask for the M T C's response to clauses (b), (c) and (d) of Council's resolution.

- 3 Council had asked as to how roads could be cleaned up on streets and subdivisions and other streets, where mud is being tracked down the street by contractors trucks, either by droppings from the trucks or from the wheels carrying it down the street.

The Subdivision Agreement makes the Subdivider responsible for keeping the streets clean as a result of the construction of his subdivision although the dirt has been tracked out by various builders and sub contractors. It is impossible to find these people or control them as in many cases more than one builder is working in the street and each of the builders may have concrete, brick, gravel and other trucks delivering material onto the site and carrying mud down the street.

on behalf of the Ancaster Central Ratepayers' Association, regarding "Legality of Operations at 210 Fiddlers Green Road", dated June 23, 1986, with respect to the uses presently being carried on at the subject property, and the legality of such uses under the Town's Zoning By-law.

Mr. Kirkaldy requested Council to strictly enforce its Zoning By-law No. 1890, and advised the Association would be prepared to assist the Town and its Counsel in mounting such legal action as necessary in this matter.

Your Chairman thanked Mr. Kirkaldy for his presentation and advised that the matter is presently in the hands of the Town Solicitor.

Development of Gibson Properties - Sulphur Springs Road - Cash in Lieu of Parkland

Mr. Donald May, of the Planning Consulting firm of May, Pirie & Associates Ltd., appeared before your Committee on behalf of his clients, advising that in view of the provisions of the Planning Act, and his 13 years of experience as a Planner, it was his opinion that 5% valuation of the lots to be developed on the Gibson properties, created by severances, should be the same as lots developed in plans of subdivision, and that based on this, he had arrived at the valuation of \$9,000.00 versus the Town's valuation of \$25,000.00 for cash in lieu of parkland, and requested the \$9,000.00 figure be accepted by the Town.

Your Chairman advised that Council would be discussing the matter of 5% cash in lieu of parkland with the Town Solicitor.

Staff Reports (cont'd.)

Coordinator-Engineer's Report #605 dated June 20, 1986 (cont'd.)

Hwy. 6 (New) Corridor Study

Recommendation - That the M.T.C. be advised that the Town would consider taking over the cemetery subject to obtaining detailed plans, satisfactory to Council, showing what was to be done to the cemetery before the Town accepted it from the M.T.C., and ask for a response to clauses (b), (c) and (d) of Council's resolution of May 12, 1986.

Subdividers - Cleaning of Streets by Town Sweeper

Recommendation - That the Town sweeper be made available to Ancaster developers at a rate to be set by our Works Superintendent, for cleaning of their subdivisions, providing rough cleaning is being done first.

Eating Area - Paved Area Behind Municipal Building

Recommendation - That an eating area be provided.

Coordinator-Engineer's Report #605 dated June 20, 1986

Recommendation - That the balance of the report be received.

Ministry of
Transportation and
Communications

Telephone: 224-7661

Planning & Design
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

August 18, 1986

Town of Ancaster
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

Attention: L. V. Hayden, A.M.C.T.
Town Clerk

Dear Mr. Hayden:

Re: Highway 6 New, Hamilton to Caledonia
WP 36-84-00

We have received your letter of July 31, 1986 and report from the June 23, 1986 Council Meeting. Our response to Clauses (b), (c), and (d) of Council's resolution of May 12, 1986 is as follows:

- (b) The Ministry's policy is to acquire only the lands which are required for future Right-of-Way, providing that access is maintained to any landlocked or severed parcels. In the case of the Reed and Donovan properties, no land will be required for the construction of Highway 6 New. A narrow strip of land on the front of the Robert's property may be required for widening on Highway 53 (subject to detail design). This would be acquired at fair market value prior to construction. The Ministry does not propose to acquire any of these properties for resale.
- (c) Once the Highway 6 New route has been approved and designated, the existing designation will be lifted on any properties no longer required for future right-of-way.
- (d) Property for Highway 6 New will be acquired approximately two years prior to highway construction. No advance acquisition is proposed.

As indicated previously, M.T.C. cannot acquire property until such time as environmental approvals have been received from the Ministry of the Environment.

With respect to the Parkin (Book) Cemetery, the details relating to future landscaping, fencing, etc. will be addressed in the detail design phase. These issues would be resolved through consultation with the Town of Ancaster at this time, and any fencing, retaining walls and access roads will be constructed by the Ministry as required.

As you are aware, the maintenance of the cemetery is currently a municipality responsibility. We would therefore appreciate a reference in the resolution confirming that Ancaster will continue to be responsible for maintenance.

We look forward to receiving a revised resolution, as requested in our letter of May 28, 1986, to clarify the specific section of highway under consideration.

Yours truly,

P. B. Shaver, P. Eng.
Project Manager

FBS:db

cc: J. Nuttall
I. Williams Cullen

TOWN OF ANCASTER



300 WILSON STREET EAST, ANCASTER, ONTARIO - L9G 2B9 - TELEPHONE 648-4401

November 3, 1986.

Mr. P. B. Shaver, P.Eng.,
Project Manager,
Planning and Design Section,
Central Region,
Ministry of Transportation and Communications,
5000 Yonge Street,
Willowdale, Ontario.
M2N 6E9

Dear Sir:

Re: Highway 6 New, Hamilton to Caledonia - WP 36-84-00

This is in response to your letter of August 18, 1986, which this office received on August 28th, which was dealt with by Council at its meeting of September 3rd. I enclose herewith that portion of the minutes that dealt with this matter.

Please accept our apology for our oversight in not responding to your letter before this date.

Yours very truly,

LVH/gf
Encl.

L. V. Hayden, A.M.C.T.,
Town Clerk.

Report Committee of the Whole (cont'd.)

Sept. 3/86

apartment development "Village by the Mill" on the DiGregorio property at the corner of Old Dundas Road and Montgomery Drive; submitting her opposition to the proposed rezoning and requesting Council give due regard to the environment and reject the rezoning of this property from single-family residential to multiple residential.

Recommendation - That the letter be received and referred to staff for report after we have public input from the public meeting next week and Ms. Beattie be so advised.

5. From Dr. Catherine Beattie, President, Association for the Preservation of the Old Dundas-Ancaster Road (APODAR), respecting the matter of road allowance expropriation, and in particular, the DiGregorio property at the corner of Old Dundas Road and Montgomery Drive, where the Town is, she understands, intending to expropriate 16 ft. of frontage along Old Dundas Road as a road allowance; advising of the Association's opposition to the widening of this scenic road, and requesting a response in this matter.

Recommendation - (See Recommendation to Item 4 of Correspondence.)

6. From R. G. Julian, Field Sales Manager, Hamilton South, Sunoco Inc., advising that Sunoco is presently entering into a service station image upgrade project in the Hamilton/Ancaster areas, which project includes 16 stations, one being located at 16 Wilson Street West, Ancaster; detailing the improvements proposed, and requesting Council's approval to proceed with the sign upgrading for this station.

Recommendation - That approval be granted to the sign changes.

7. From P. B. Shaver, P.Eng., Project Manager, Planning & Design Section, Ministry of Transportation and Communications, respecting the Hwy. 6 (New) Corridor Study; responding, as requested, to clauses (b), (c) and (d) of Council's resolution of May 12, 1986, and also noting in respect of the Parkin (Book) Cemetery, that details relating to future landscaping, etc. will be addressed in the detail design phase, and again requesting a revised resolution be passed by Council to clarify the specific section of highway under consideration, with such resolution confirming that the Town will continue to be responsible for the maintenance of the subject cemetery.

Recommendation - That the M.T.C. be advised as follows:

That -

- (a) tentative approval be given to the proposed alignment for new Highway 6,
- (b) the Reed, Roberts and Donovan properties be purchased and resold, to ensure that these owners are not being required to accept a disproportionate share of the cost of constructing this highway,
- (c) property presently frozen for the proposed highway be released where it is apparent it is not needed,
- (d) acquisition of property required for new Highway 6 construction be proceeded with when environmental approvals have been received from the Ministry of the Environment,
- (e) Council consider closing a portion of Butter Road subject to

Report Committee of the Whole (cont'd.)

another parallel portion being opened so it could be realigned in accordance with these proposals subject to negotiations between the M.T.C. and the Town providing for protection of adjacent properties and suitable construction details, and

- (f) the Town would consider taking over the cemetery subject to obtaining detailed plans, satisfactory to Council, showing what is to be done to the cemetery before the Town accepts it from the M.T.C.

8. From Warren S. Waxman, 925 Lower Lions Club Road, submitting a petition signed by 21 residents on Lower Lions Club Road and Louise Drive, which requests that street lights be installed along Lower Lions Club Road, for safety and aesthetic reasons.
Recommendation - That Mr. Waxman be apprised of our policy to provide an estimate of cost on a local improvement petition for submission to the petitioners.

Councillor McKeon declared conflict of interest in the following item of Correspondence, as his legal firm acts on behalf of Mr. Coombs, and refrained from discussion and voting.

9. From Solicitor Robert G. Wynne, of the legal firm of McKeon, Wilkins, Wynne & Horodyski, on behalf of his client, Mr. Maurice Coombs, 381 Woodworth Drive, setting out the problems his client faces in respect to -

- (a) the extension of Calvin Street,
(b) the water situation at the rear of his residential property, and
(c) a problem that he has with the Ministry of the Environment in respect to a wall at the rear of his property.

Recommendation - That a copy of Mr. Wynne's letter be forwarded to the Town Solicitor, Mr. Yates, as quickly as possible, for his advice in this matter.

Staff Reports

Coordinator-Engineer's Report #609 dated August 28, 1986

Speed Reading Course

Recommendation - That Mr. Fitzpatrick be authorized to attend and the Town pay the cost of the course.

Emergency Lighting - Ancaster Library

Recommendation - That the lighting be installed at the estimated cost of \$900.00.

Proposed Zoning By-law Amendment - Hallett Property, 22 Cait Court

Recommendation - That the staff contact Mr. Hallett and arrange a meeting in an attempt to work out a solution so that Council can deal with this matter next week.

Councillor Ferguson declared conflict of interest in the following

memorandum

Planning and Design Section, Central Region - Tel. 224-7582



To: File

Date: 1984 03 16

MINUTES OF MEETING

March 15, 1984
Boardroom 'A', 5000 Yonge Street
8:30 a.m.

Attendance:

K. Morgan - M.O.E. Review Co-ordinator
P. Shaver - M.T.C. Project Manager
B. Ogden - M.T.C. Environmental Planner

Subject:

Highway 6 New, Hamilton to Caledonia

The purpose of the meeting was to familiarize K. Morgan, the designated M.O.E. review co-ordinator, with the proposed study area and the general background and study approach for the Highway 6 New Route Planning/Preliminary Design Study.

The study area and recommendations of the 1976 Joint Use Corridor Feasibility Study were reviewed, along with recent major developments in the subject area. The extensive and intensive study areas (attached) for the new study were presented, and agreement in principle was reached on the following points:

- (i) During the initial phase of the study, and prior to the collection the detailed data, the project team and consultant will meet with M.O.E. to discuss the limits of the intensive study area. At this time, the objectives of the study will be reviewed and the justification for the narrowing (if any) of the study and corridor will be presented.
- (ii) Following the above, the study will proceed according to the M.T.C. guidelines (November 1983) for an Environmental Assessment Report, One Stage, for a Group 'A' Project.
- (iii) The study design will be reviewed with the M.O.E. once submitted by the consultant.

It is anticipated that a consultant will be assigned and the study commenced in May or June of this year.

P. B. Shaver
Project Manager

PBS/jh

cc: L. Dutchak ✓

DILLON
Consulting Engineers & Planners

OUR FILE 9576-01/17
YOUR FILE

20 March 1985

Ministry of the Environment
Environmental Assessment Branch
7th Floor, 135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Attention: Ms. K. Morgan
Environmental Planner

Highway 6 New - Hamilton to
Caledonia

Dear Ms. Morgan:

Attached is a corrected copy of the Minutes of our meeting held on 6 February 1985. The Ministry of Transportation and Communications reviewed these Minutes and requested that we make some modifications in terms of clarification of certain points. These modifications have been made and the attached Minutes constitute the formal record of that meeting.

Yours truly

M.M. DILLON LIMITED

I. Williams
I. Williams, P. Eng.
Project Manager

IW/cp
Encl.

cc: Mr. M. McLeod - MOE
Mr. P. Shaver - MTC ✓
Mr. B. Ogden - MTC
Mr. F. Leech - MTC
Ms. J. Tennyson - M.M. Dillon Limited
Mr. J. Horton - M.M. Dillon Limited

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

MINUTES OF MEETING

9576-01/14

DATE: 6 February 1985

LOCATION: M. M. Dillon Limited, Toronto

PRESENT:

| | |
|-----------------|----------|
| Ms. K. Morgan | - MOE |
| Mr. M. McLeod | - MOE |
| Mr. P. Shaver | - MTC |
| Mr. B. Ogden | - MTC |
| Mr. F. Leech | - MTC |
| Ms. J. Tennyson | - Dillon |
| Mr. I. Williams | - Dillon |
| Mr. J. Horton | - Dillon |

The meeting was held to review the study objectives and confirm the intensive study area.

Major points of discussion are summarized as follows:

1. Mr. Ogden indicated that Ms. Morgan, Mr. Shaver, and Mr. Ogden had met last March 15, 1984 to discuss the proposed study area and the general background and study approach for the Highway 6 (New) Route Planning/Preliminary Design Study. At that time, the study area and recommendations of the 1976 Joint Use Corridor Feasibility Study were reviewed, along with recent major developments in the subject area.

At that meeting it was agreed that:

- i) during the initial phase of the study, and prior to the collection of the detailed data, the project team and consultant would meet with MOE to discuss the limits of the intensive study area. At that time, the objectives of the study would be reviewed and the justification for the narrowing of the study and corridor would be presented;
- ii) following the above-mentioned meeting, the study would proceed according to the MTC guidelines (November 1983) for an Environmental Assessment Report, One Stage, for a Group 'A' Project;
- iii) the study design would be reviewed with MOE once it had been submitted by the consultant.

2. The purposes of this meeting were outlined as follows:

- to review the study's objectives,
- to discuss the study area, and
- to have an informal discussion of the study schedule.

3. Mr. Shaver discussed developments which have occurred since 1976. The Caledonia By-pass was built in 1983. The preliminary design was completed and the route chosen for Highway 6 south of Caledonia, but none of the route had been designated. Highway 6 north of Caledonia was put "on hold" awaiting completion of the Hamilton-Wentworth Official Plan and formulations and the Mount Hope Airport plans. A short section from Highway 403 to Book Road was designated, due to development pressure in the area. In 1980, the Official Plan for the Regional Municipality of Hamilton-Wentworth was approved. Hamilton-Wentworth wanted the new highway, but one which would be the least disruptive. In 1982, the airport plans were finalized. Construction is to finish next year.

The Regional Municipality of Hamilton-Wentworth and the Federal Government have indicated to MTC a strong interest in the development of Highway 6 (New), particularly the north section to serve the airport.

MTC has reviewed the 1976 material mentioned earlier and found that additional documentation would be required to meet the requirements of a full Environmental Assessment Report.

4. Mr. Williams then discussed the preparation of the detailed study design. Three tasks have been completed; namely, the transportation analysis, the confirmation of the objectives for Highway 6 (New) Hamilton to Caledonia, and the identification of the intensive study area.
5. Mr. Williams presented the objectives for Highway 6 (New) which have been adopted by senior management at MTC.

These objectives are as follows:

- i) Provide access from the airport to the existing freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
- ii) Increase use of the Caledonia By-pass.
- iii) Improve access and provide flexibility for development in Townsend/Nanticoke.
- iv) Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.

- v) Select a route which can be stage constructed in a realistic and economical manner.

Next, Mr. Williams compared the performance of the corridors to the objectives (see attached Exhibit) and explained the reasons for eliminating the East and Central Corridors. MTC's decision to focus on the West Corridor and the resulting intensive study area was explained. Mr. Williams also indicated that feedback from agencies and the public will be obtained with respect to eliminating these two corridors, and MTC's rationale will be explained.

6. Mr. Ogden then elaborated on the justification for the intensive study area with respect to servicing the airport. It was also pointed out that the timing of the development of the Regional Municipality's E-W and N-S arterial system is beyond the control of the MTC.

For the purposes of the Environmental Assessment, MTC is assuming an ultimate full freeway will be protected with an initial 4-lane arterial being constructed for Highway 6 (New).

Mr. Ogden discussed the minor changes which will be made to the Caledonia By-pass to relocate it behind the Hydro installation. This change will improve the functioning of the By-pass, but it is independent of this study on Highway 6 (New).

7. The Environmental Assessment Report prepared by Dillon will cover the Hamilton to Caledonia section only. However, as the objectives for the highway relate to the entire corridor the discussion on project justification will include reference to the entire corridor.
8. Mr. Ogden discussed the issue of public notification with respect to Highway 6 (New). He indicated that they have been cautioned to delay public notice until there is a clearer idea of when the hearings on the E-W/N-S facility will end. A meeting has been arranged with the External Team on 12 February 1985 to begin the data-gathering process. Public information centres will likely be held in the Spring. Mr. Ogden believes that there is some community support for the project.

Contact with MOE, the external agencies, and the public will follow the normal MTC approach indicating the critical decisions which have been made.

9. With respect to the timing of construction of the project, it was indicated that it might be beyond the year 2000, however, if airport construction requires the facility sooner, then perhaps the project would proceed within the next ten years.

10. It was indicated that staging of the project would be a matter analysed during the study.

11. Copies of the 1976 report will be provided for MOE and the consultant.

The minutes of the meeting were prepared by Ms. J. Tennyson of M. M. Dillon Limited. Any errors and/or omissions should be reported to her.

Distribution

All present.

MEMO TO: File

CC: All Present
All External Team Members

FROM: J.M. Harker, M.M. Dillon

SUBJECT: Highway 6 (New) Route Location and
Preliminary Design Study -
Hamilton to Caledonia
External Team Meeting

FILE: 9576-04-2

DATE: 25 February 1985



MINUTES OF MEETING

1. Introduction

A meeting was held on 12 February 1985 with representatives from the External Team for Highway 6 (New) - Hamilton to Caledonia Route Location and Pre-Design Study. Its purpose was to discuss:

- project history;
- project objectives and study area;
- study design;
- data requirements;
- study schedule; and
- external team involvement

Those in attendance, and their representative affiliations, included the following:

| | |
|------------------|-----------------------------|
| J.P. Horton, MMD | K. Morgan, MOE |
| I. Williams, MMD | A. Knowles, MOE |
| J. Tennyson, MMD | J. Tamm, MGS |
| J. Harker, MMD | R. Farewell, MGS |
| B. Ogden, MTC | A. Gray, Solicitor General |
| P. Shaver, MTC ✓ | M. McLeod, Transport Canada |
| L. Dutchak, MTC | L. Grant, MMAH |
| H. McNeeley, MTC | |

Approximately 49 representatives were invited, however, because of the extremely inclement weather, several individuals could not attend. In view of this an information package was submitted to all external team members.

2. Introduction and Purpose

B. Ogden, MTC introduced the project and discussed the pre-consultation submission approach. Its purpose is to address and resolve significant issues during the project before critical decisions are made. Members of the external team will be provided with the appropriate material and information for comment during the entire study.

3. Project History

During the late 1960's and early 1970's, several studies and major development proposals led to the identification of existing and potential traffic capacity problems in the Highway 6 corridor between Hamilton and Port Dover on Lake Erie. These studies and proposals included:

- the 1968 Brantford area highway planning study;
- the Niagara-Lake Erie Transportation Study (completed in 1976);
- development plans including:
 - .. large scale industrial development in the Nanticoke area by Ontario Hydro, Texaco, and Stelco
 - .. Provincial plans for a new city (Townsend) north of Lake Erie.

In responding to these proposals, the Ontario Ministry of Transportation and Communications in 1975 proceeded with the "Highway 6 - Nanticoke to Hamilton Joint-Use Corridor Study". The prime objective of that study was to identify an acceptable route for a new joint-use transportation corridor (including a highway and other major utilities such as hydro and pipelines) between the Nanticoke area and Hamilton. The report on this study was issued in March 1976.

That report recommended an alignment for a new route between - Nanticoke and Caledonia, including the now completed Caledonia By-pass. Preliminary design for the route was subsequently completed. The study noted, however, that the alignment for Highway 6 (New) between Caledonia and the Hamilton area should not be determined until:

- the Hamilton-Wentworth official plan was completed; and
- plans for the expansion of the Mount Hope Airport site were confirmed.

In the event that a connection to Highway 403 might be selected in the future, a designation was laid down east of Fiddlers Green Road, between Highway 403 in Ancaster and Book Road for the protection of property. No property has been acquired in conjunction with this designation.

Subsequently, the lower-than-anticipated rate of development in the Nanticoke-Townsend area led to the deferral of the need for Highway 6 (New).

4. Project Objectives and Study Area

The consultant then presented the objectives of Highway 6 (New):-

- to provide access from the airport to the existing freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself;
- to increase use of the Caledonia By-Pass;
- to improve access and provide flexibility for development in Townsend/Nanticoke;
- to improve access to the easterly industrial area of Hamilton, such access currently provided by the local road system;
- to select a route which can be stage-constructed in a realistic and economical manner.

Three corridors have been looked at in the past:

- 1) an East Corridor (connecting to the Regional Municipality's proposed east-west arterial route);
- 2) a Central Corridor close to existing Highway 6 also connecting to the Region's proposed east-west arterial route; and
- 3) a West Corridor connecting to existing Highway 403.

An assessment of how these corridors meet the stated objectives has been carried out and was presented during the meeting.

The MTC have concluded that only the west corridor adequately meets the major objectives - particularly concerning construction staging. Consequently, the east and central corridors will not be investigated any further. However, during subsequent public information centres the east and central corridors will be shown together with the reasons for their abandonment.

5. Study Design

A detailed study design has been prepared. Copies of this were given or sent to all External Team members. Selected points on the schedule were highlighted where participation from External Team Members will be invited.

6. Study Schedule

A summary of the project schedule is as follows:

| | |
|---|---------------------|
| - Project Start Up | September 1984 |
| - Confirm Intensive Study Area | January 1985 |
| - Obtain Relevant Base Data | February/March 1985 |
| - Preliminary Assessment of Feasible Alternatives | March 1985 |
| - First Series of Public Information Centres | April/May 1985 |
| - Select Preferred Route | August 1985 |
| - Second Series of Public Information Centres | September 1985 |
| - Prepare Preliminary Design of Recommended Route | April 1985 |
| - Final Series of Public Information Centres | June 1986 |
| - Prepare Final Reports | November 1986 |

7. Data Requirements

Prints of a 1:10,000 photomosaic were distributed to all External Team Members. Mr. Williams requested that pertinent information, particularly environmentally significant issues/areas, be mapped on these and returned so that these issues could be taken into account before generating alternative routes in the study area. If necessary, meetings will be held with individual agencies.

8. Conclusion

Information packages were handed out to each External Team Member present. Packages will be mailed to Team Members not present.

The meeting was then adjourned.

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

MINUTES OF MEETING

9576-01/14

DATE: 18 April 1985

LOCATION: Domtar Offices in Caledonia, Ontario

A meeting was held to discuss the extent of gypsum mining in the vicinity of the Caledonia By-pass.

(Note: Mine locations were an important issue in designing the by-pass. Following surveys all mine sites were avoided by the roadway).

Those in attendance were:

| | |
|----------------------------------|----------|
| Mr. H. Wood, Mine Superintendent | - Domtar |
| Mr. J. Fraser | - MNR |
| Mr. P. Shaver | - WTC |
| Mr. B. Ogden | - WTC |
| Mr. J. Horton | - Dillon |

Mr. Wood was questioned on the extent of gypsum mining north of the north end of the Caledonia By-pass. This is an area west of existing Highway 6 and north of Seneca Green Road. Mr. Wood provided a plan, No. T043-82, titled "Yearly Mine Limit Update Plan" for Plant 324, Caledonia Minesite, dated 1/8/1981.

The plan showed mines in the following locations:

- South of Seneca Green Road, east of the Caledonia By-pass and west of Highway 6.
- South of Seneca Green Road, west of the Caledonia By-pass and east of Plank Road.
- West of Plank Road extending approximately 2500 ft. north of Seneca Green Road.

The plan showed no mining activity immediately north of the Caledonia By-pass between existing Highway 6 and Plank Road.

Mr. Wood stated that Domtar had no plans for future mining in the area immediately north of the north end of the Caledonia By-pass. Mr. Wood believed that there were no gypsum resources in that area, and thus Domtar would have no plans for future mining in that area. Future work by Domtar is being conducted in the area west of Plank Road.

Domtar is the only firm mining gypsum in the immediate vicinity and the representatives from Domtar and the Ministry of Natural Resources were unaware of any other mining activity having been conducted in the area north of the north end of the Caledonia By-pass.

Based on the information received from both Domtar and MNR, it was concluded that:

1. there are no existing Domtar mines in the area immediately north of the north end of the Caledonia By-pass;
2. there is no other known mining activity in the area north of the north end of the Caledonia By-pass;
3. Domtar has no plans for future mining north of the north end of the Caledonia By-pass.

Therefore, mining activity should not affect alternative alignments for Highway 6 (New) north of the north end of the Caledonia By-pass.

These Minutes of Meeting were prepared by Mr. J. Horton of M. M. Dillon Limited. Any errors or omissions should be reported to him.

Distribution

All present
F. Leech

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File No. 9576-01/14

WP 36-84-00

MINUTES OF MEETING

A meeting was held on 17 July 1985 at the offices of Mr. D. Collins on Upper James Street in Hamilton to discuss the Highway 6 (New) project and its effects on his pet cemetery operation.

Those in attendance were:

| | |
|------------------|----------|
| . Mr. D. Collins | |
| . Mr. B. Ogden | - MTC |
| . Mr. J. Horton | - Dillon |

Mr. Collins previously owned the Clapperton property and severed a parcel of land for the pet cemetery approximately 15 years ago. In 1980, he doubled the size of the cemetery when Transport Canada took lands for the runway extension.

The pet cemetery is zoned commercial and this required an Ontario Municipal Board hearing and legal costs were approximately \$9,000. The total property will hold approximately 2,000 - 3 ft. x 6 ft. plots. At the present time, some 600 to 700 plots have been used.

There are some 8 to 10 persons who have willed that their animal be buried in the cemetery. They have selected a plot in advance.

There are also some 30 plots that have been selected and paid for, for the interment of animals. In addition, there are some 2 or 3 plots that have been selected that are for the burial of human ashes.

Currently there are 2 or 3 sites that contain human ashes.

Each of the lots are sold for the individual's use, and Mr. Collins provides perpetual care. Each plot is given a lot and row number and a registered receipt of ownership. However, deeds are not given to the owners.

A plot and burial costs approximately \$500. Mr. Collins sells approximately 60 lots per year.

If Highway 6 (New) were to remove his cemetery, Mr. Collins believes that there would be considerable opposition from the plot owners. He believes many of the plot owners have strong emotional ties to their animal's plot. There are approximately 8 or 10 visitors per day on the weekend and he provides 12 parking spaces as part of the zoning requirements.

Mr. Collins believes that continued access is required to keep his operation viable. If access were restricted, he would not only lose the future business of the remaining plots, but would have problems with commitments made to date.

In addition, if the freeway facility were to come close to the cemetery, he believes that it may detract from its desirability as a pet cemetery. He believes many people select his cemetery due to its rural setting. He would require some time after the highway was built to assess his loss of business.

He believes it would be possible to extend the size of his operation further to the south if the 2,000 plots were filled.

It was explained to Mr. Collins that plans of alternative interchange and highway alignments were being prepared. In the Fall a second series of Information Centres are to be held to review the selected alignment. At this time the exact effects on his property would be known.

Mr. Collins stated that he would probably not attend a second series of Information Centres as he believes we are aware of his concerns.

These minutes of meeting were prepared by Mr. J. P. Horton of M. M. Dillon Limited. Any errors and/or omissions should be reported to him.

Distribution

All present
P. Shaver
F. Leech
L. Post

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File No. 9576-01/14

WP 36-84-00

MINUTES OF MEETING



A meeting was held at the offices of M. M. Dillon on 2 October 1985 to discuss the Highway 6 (New) project.

Those in attendance were:

| | |
|-------------------|---------------------------------|
| • Mr. F. Johnson | - Ministry of Natural Resources |
| • Mr. T. Harvey | - Ministry of Natural Resources |
| • Mr. G. Birch | - Ministry of Natural Resources |
| • Mr. P. Shaver | - MTC, Planning and Design |
| • Mr. J. Nuttall | - MTC, Environmental Unit |
| • Ms. J. Tennyson | - M. M. Dillon Limited |
| • Mr. B. Kowalyk | - M. M. Dillon Limited |
| • Mr. J. Horton | - M. M. Dillon Limited |

Ms. Tennyson began the meeting by discussing the ways in which natural environmental concerns have been incorporated throughout the planning and design process for Highway 6 (New), including identified MNR concerns as well as Dillon's field investigation.

Mr. Kowalyk presented in detail the field investigations undertaken by Dillon and the subsequent analysis of the natural environment. The Dillon analysis relied heavily upon information supplied by the Ministry of Natural Resources. However, in certain instances, additional field investigations were required for more detailed information, especially with respect to certain woodlots and the identified waterfowl area.

There was some discussion regarding the ranking of mapped natural vegetation units into three categories. It was agreed that Dillon would furnish MNR with two copies of the 1:10,000 aerial mosaic with the three categories, as defined by Mr. Kowalyk, shown. The Ministry will review these classifications and will re-examine their comparison of the alternative alignments based upon this new information. Their comments will then be provided.

The waterfowl area identified by MNR south of White Church Road immediately west of Highway 6 was subject to a field investigation by Dillon staff. A memo outlining these investigations was presented to the MNR representatives. The area is a meandering floodplain of the Welland River providing some waterfowl habitat. However, the majority of the wildlife species observed in the vicinity were located in the woodlot west of the identified waterfowl area. A MNR biologist will field check the significance of the area.

The Ministry of Natural Resources had provided information on sand and gravel pit operations within the study area. The location of one pit was questioned and it was found to be immediately south of Highway 403 within the MTC designated lands. This was referred to as the licensed Shaver sandpit. It is currently inactive and was identified for information purposes only.

The recommended alignment was reviewed briefly along with the reasons for its selection. The MNR representatives were informed that they would be provided with 1:10,000 scale aerial mosaics of the study area showing the alternative alignments and the recommended alignment at the External Team Meeting. Also included in the information package would be the assessment tables indicating the factors and criteria used in the assessment and comparative evaluation. MNR was also provided with a sheet showing the natural environment factors and criteria used within the study area.

Once the MNR officials have had time to review the information provided by Dillon and the recommended alignment, another meeting may be held to receive their comments on the recommended alignment. Although a Study Team recommendation has been made on an alignment, it was stressed that there was still flexibility for changes within this alignment. Their comments and others made by External Team members, the public and councils will be taken into consideration in determining the final alignment.

These minutes of meeting were prepared by Mr. J. P. Horton of M. M. Dillon Limited. Any errors or omissions should be forwarded to him.

DISTRIBUTION

All Present
F. Leech

memorandum



To: File

Date: November 1, 1985

Re: Minutes of Meeting
Highway 6 (New)
Hamilton to Caledonia
W.P. 36-84-00

DATE: October 28, 1985; 2:00 p.m.

PLACE: M. M. Dillon Ltd.,
47 Sheppard Avenue East, Willowdale

ATTENDEES: Ms. A. deFort-Menares Ministry of Citizenship
and Culture
Ms. J. Tennyson M. M. Dillon Ltd.
Ms. S. Drummond MTC, Environmental Unit
Mr. A. J. Nuttall MTC, Environmental Unit

OBJECTIVE:

This meeting was held for two main reasons:

1. to describe the nature of the investigation of heritage resources (built environment and cultural landscape) undertaken for this study and to explain how this information has been incorporated into the route selection and preliminary design phases of the study; and
2. to outline, briefly, the technically recommended route as presented to the External Team meeting held in Ancaster on October 18, 1985.

This meeting was held to keep Ms. deFort-Menares, who has recently replaced Mr. D. Cuming as the study's contact within the Ministry of Citizenship and Culture (MCC), informed as to the progress of the study to date.

Notes:

1. Mr. Nuttall described the investigation of heritage resources within the study area subsequent to the commencement of the study. Field investigations included windshield inventory of built environment features of heritage interest and observations of landscape character which were used in the description of various cultural landscape units. In addition to archival/library research, contact was made with MCC, provincial groups such as the Architectural Conservancy of Ontario, individual LACAC's in Ancaster, Glanbrook and Haldimand, and local historical groups, to obtain further information.

Heritage information was incorporated into the route selection process in two forms: individual features and visual/landscape character. Individual built environment features and major elements of cultural landscape were classified in terms of broad categories of exceptional/unique and common/ordinary occurrence and significance, the former being recognized as more sensitive to a proposed route. Only one site was designated under the Ontario Heritage Act, but others of great interest were also identified, including the Book houses (early 19th Century) and Book Cemetery on Book Road, churches, cemeteries and other residences or building complexes. Cultural landscape units were identified using a combination of survey (lot, concession and road) patterns, current and known historical land uses, natural topography and vegetation and scenic and visual qualities.

2. The technically recommended route and the reasons for its selection were outlined by Mr. Nuttall and Ms. Tennyson. A detailed account of the constraints associated with the Book Road crossing was included.
3. Ms. deFort-Menares asked about the type of mitigation that would be provided regarding the proposed removal of the barn on the Book farmstead. Mr. Nuttall replied that the farmstead was no longer an active one as the adjacent land was farmed from an operation centred on Highway 53 (at present). The Book house site is used solely for residential purposes. He indicated that appropriate mitigation would be investigated at the detail design stage of the project and that the option of moving the barn out of the right-of-way would be considered. Any decision regarding the future of the barn would depend, in part, on an agreement being reached with the current owner of the property.

MINUTES OF MEETING

FILE 9576-01/14

9 APRIL 1986

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

ROUTE LOCATION AND PRELIMINARY DESIGN STUDY

A meeting of the External Team for Highway 6 (New) was held at the Marriott Hall, Highway 53, Ancaster, Ontario on 7 April 1986.

Those in attendance were:

| | |
|---------------------------|---|
| . Ms. K. Morgan | - Ministry of the Environment |
| . Mr. H. Lim | - Ministry of the Environment |
| . Mr. R. Krawczyniuk | - Ministry of the Environment |
| . Mr. T. Harvey | - Ministry of Natural Resources |
| . Mr. W. MacMillan | - Grand River Conservation Authority |
| . Ms. A. de Forte-Menares | - Ministry of Citizenship and Culture |
| . Mr. R. Alstrom | - Ontario Hydro |
| . Mr. P. Monture | - Six Nations |
| . Ms. C. Davis | - Six Nations |
| . Mr. J. Ford | - Hamilton-Wentworth Public Health Unit |
| . Mr. P. Shaver | - Ministry of Transportation & Communications |
| . Mr. J. Nuttall | - Ministry of Transportation & Communications |
| . Ms. J. Tennyson | - M. M. Dillon Ltd. |
| . Mr. J. Horton | - M. M. Dillon Ltd. |

Mr. Nuttall started the meeting with an introduction of the Study Team and a summary of the progress to date. Since the last External Team Meeting in October of 1985, the Study Team has taken into consideration comments received from the public, External Team members, and local Councils and have modified the technically recommended alignment. The recommended alignment has been completed in preliminary design level of detail and will be presented to the public during the third and final series of Public Information Centres on 7 April 1986 and 9 April 1986.

Today's meeting is being held to present the recommended alignment to the External Team and solicit their comments. In order to assist the External Team members in preparing comments on the recommended alignment a table was prepared showing all factors and criteria used in the evaluation of the recommended alignment. In addition, a table was prepared showing the response to date received from all External Team members. A brochure outlining the third and final series of Public Information Centres was also presented to the External Team members in attendance. Mr. Nuttall requested that the External Team members review the information provided to them and provide comments to the Study Team.

Following Mr. Nuttall, Mr. Horton made a brief presentation of the recommended alignment outlining all major constraints/controls. In addition, the major changes in the alignment since the last External Team Meeting were outlined. A shift in alignment between Book Road and Highway 53 was considered to avoid segmenting a wood lot. However, due to constraints and highway geometrics at Highway 53 due to residences and conflicts with Ontario Hydro, this alignment shift was not possible. However, south of Book Road a shift in the alignment was possible to minimize the fragmenting of a wood lot between Book and Butter Roads. This shift in the alignment also parallels the existing lot lines, thus minimizing farm severances.

In the White Church Road area, considerable changes were made due to requests from Transport Canada, local residents and the Township of Glanbrook Council. The full interchange at White Church Road has been replaced with a Trumpet B interchange south of White Church Road with a connection to existing Highway 6. This shift in the interchange at White Church Road allows the Airport Road interchange to connect directly with the parking area at the existing terminal facilities. The interchange south of White Church Road requires slightly more area of the waterfowl nesting area along its easterly extremity.

A detailed noise evaluation has been undertaken of the recommended alignment. Mitigation is proposed at Highway 53. Residences at Book Road, Butter Road and Glanbrook Road will be impacted to a larger extent by the airport than Highway 6 (New). Mitigation was examined at White Church Road as one residence, the Valvasori property, will be at or slightly above 55 dBA. However, the size and extent of barrier required to produce a noticeable change in sound levels were judged to be impractical. No additional mitigation, beyond the deep cut at Unity Road, is being provided.

Ms. Tennyson presented the summary of the External Team responses received to date and requested that the External Team members review the summary and advise her of any errors or omissions.

Mr. Shaver invited the External Team members to review the displays and ask any questions they had. The draft Environmental Assessment Report is expected to be submitted some time in 1986.

These Minutes of Meeting were prepared by Mr. J. P. Horton of M. M. Dillon Ltd. Any errors or omissions should be reported to him.

DISTRIBUTION:

All present
F. Leech

4. Ms. deFort-Menares asked about the nature of the identified waterfowl area. She was advised of ongoing discussions with the Ministry of Natural Resources and of the study's own investigations on the habitat quality of the area.
5. Ms. deFort-Menares asked about the extent of land severances. She was informed that many apparent severances actually retain viable access by means of public roads or adjacent parcels under common operation. In several cases, consideration of the provision of access will be made. Where "landlocked" parcels of land would be created, MTC would obtain those parcels, with a view of possible future disposal to adjacent landowners.
6. Ms. deFort-Menares was provided with a copy of the External Team information package to assist her in making further comments, preferably at an early date.
7. These minutes were prepared by the undersigned. Corrections or alterations should be referred to him.

A. Jay Nuttall
A. Jay Nuttall
Environmental Planner
MTC, Central Region

AJN:dl

c.c.
All Present
I. Williams (M.M. Dillon)
P. Shaver

MEMO TO: File

FROM: J. P. Horton

CC: ~~P.~~ Shaver
J. Nuttall
J. Tennyson
I. Williams

SUBJECT: Highway 6 (New) - Hamilton to Caledonia

FILE NO: 9576-01/13

DATE: 3 March 1986

This memo will document a meeting between Mr. and Mrs. M. Whaling, the author, and Mr. P. Shaver of the Ministry of Transportation and Communications. Mr. and Mrs. Whaling own Mike's Motor and Marine Service Limited, Highway 6 south of Mount Hope.

The Whaling's business is located on the west side of Highway 6 just north of Chippewa Road. It is commercially zoned and they have been in business for the last three years. Their property also contains their home.

The Whalings located in this area due to the high traffic volumes on Highway 6. They believe their business is largely dependent upon passing traffic.

The Whalings are concerned over the loss of traffic on existing Highway 6 south of the proposed connection to Highway 6 (New). The Whalings suggested that the connection to Highway 6 (New) be placed immediately south of them near Chippewa Road. This was briefly examined and the severe impacts to the agricultural community and the removal of two residences was outlined to them.

The Whalings state that they were not aware of the recent Property Owners Meeting held in the Town of Mount Hope. Therefore, this meeting was held to bring them up to date on the proposed interchange configuration, the staging and timing for Highway 6 (New).

The Whalings will receive a direct mailing for the next brochure outlining the third and final series of Public Information Centres. Their address is as follows:

Mr. and Mrs M. Whaling
P.O. Box 237
Mount Hope, Ontario
L0R 1W0

JPH:gjo



memorandum

Environmental Unit, Planning & Design, Central Region

Telephone: 224-7598



To: FILE
Airport/Railway Noise and
Procedures for Assessment in an E.A.

Date: October 10, 1986

Re: Meeting Between Staff of M.O.E. and M.T.C.
September 17, 1986 9:00 a.m. - 12:00 p.m.

In attendance: Les Kende
Sheldon Benner
Roman Krawczyński
Conrad Chui
Loretta Popiel
Jim Clifford
Harvey McNeely
Jamie Dougall
Chris Blaney
Dan McKnight

These were the order of events:

- 1) The meeting began with Les Kende presenting M.O.E.'s position on Air/Rail noise. His arguments included;
 - Under NPC-106 of the M.O.E. Model Municipal Noise Control By-law, the concept of urban hum excludes "Highly intrusive transportation noise such as aircraft and railway noise".
 - In that there is no method currently acceptable to M.O.E. for the analysis of the "urban hum" or consistency aspects of noise generated by aircraft in close proximity to airports, aircraft noise should not be included in any E.A.

M.T.C. staff then pointed out the following;

- While the occasional passby of airplanes should not be included in an analysis, if a location was adjacent to the influence area of a significant airport, then aircraft noise should be considered.
- The M.O.E. model By-law is not a document which was meant to apply to either environmental assessments or M.T.C.
- NPC-106 uses a C.M.H.C. type noise prediction methodology, where M.T.C. usually uses Stamina 2.
- The concept of "urban hum", in the opinion of M.T.C. staff, can apply when airplane traffic near airports effects the ambient to the extent that predictable N.E.P. or N.E.F. contours can be generated by Transport Canada.

- 2) There was some question as to whether M.O.E. had supported M.T.C.'s evidence that railway noise (also a short term event noise) should be included in the Parry Sound Bypass Environmental Assessment. Jim Clifford indicated that M.O.E. might not have had a chance to fully recommend on M.T.C.'s revised acoustical evidence at the hearing. At this time Jamie Dougall pointed out that the transcripts from the hearing indicated that M.O.E. had the opportunity to comment, and did not disagree with the inclusion of railway noise.
- 3) Harvey McNeely asked a general question regarding the inclusion of short term event noise from an industrial source in a roadway Environmental Assessment. Les Kende indicated that M.O.E.'s response to industrial noise problems is based largely on complaint data. This is due to the varying perceptions of industry among various geographical regions of Ontario. If an industrial noise is generating complaints, it can be said to be a significant noise source to residences.
- 4) From this very broad discussion of how short term event noise issues are dealt with presently, Jamie Dougall indicated that in the case of airport noise, M.T.C. did not wish to be paying for mitigation that would be ineffective, or that was from another jurisdiction's source. If airport noise was removed from the consideration of ambient, then both these situations could occur. At this point, Vic Schroter indicated that there is little consistency in the noise from airports (i.e. no "urban hum"). Harvey McNeely pointed out that it is possible, in some situations, where the volume of air traffic off a runway could be considered constant. These areas could be defined by the Federal Governments N.E.F. and N.E.P. contours. Dan McKnight pointed out that M.O.E. currently uses these contour maps in order to calculate ambient for the draft approval of subdivisions near airports (under the M.O.H. airport policy). This was confirmed by Sheldon Benner. Les Kende indicated that he felt there was a major difference in rationale behind the two types of assessments.
- 5) The discussion changed focus from the broad policy issue of whether airport noise should be included in an Environmental Assessment, to a discussion of the specifics of the Highway 6 (New) Environmental Assessment. Dan McKnight indicated that although Highway 6 (New) could be used as a source of examples for discussion, the broad policy issue of whether to include short term event noise (airport noise) into an Environmental Assessment should not be decided on the basis of this one example.

At this time Roman Krawczyński indicated that if airport noise were removed from the Highway 6 (New) Environmental Assessment, despite the greater noise impact, M.T.C. would probably not provide noise barriers as the homes were both small in total numbers and widely dispersed. Dan McKnight confirmed this observation, but indicated the M.T.C. study team for Highway 6 (New) would make the ultimate decision as to the cost effectiveness of noise mitigation in this area. Chris Blaney pointed out that when the Environmental Assessment Board sees large noise impacts, they have been pushing M.T.C. towards off right-of-way noise mitigation.

6) Dan McKnight stated that the Environmental Assessment for Highway 6 (New) was on a very tight time schedule, and therefore, there was a need to resolve this issue. Les Kende indicated that the whole matter of short term event noise and airport noise required extensive research before M.O.E. could give any consideration to the inclusion of airport related noise into an E.A. document. At this point Harvey McNeely identified the two options M.T.C. currently has with respect to the Highway 6 (New) Environmental Assessment. These options are;

- 1) M.T.C. includes airport noise in the E.A., and risks a confrontation with M.O.E. over this issue.
- 2) M.T.C. removes airport noise from the E.A., and then M.O.E. is more likely to support the noise analysis section.

Regardless of which option M.T.C. chooses for Highway 6 (New) Jamie Dougall and Les Kende both indicated that the two Ministries should continue discussion on the much broader issue of rural noise impacts. From these discussions a decision on short term event related noise could ultimately be achieved.

As M.T.C. appears to be leaning more towards option 2, Jamie Dougall indicated that a brief disclaimer should be put in the Highway 6 (New) E.A.. This would state that the consideration of airport related noise was removed from this particular E.A. due to concerns expressed by M.O.E.. Loretta Popiel identified her concern that this statement may not be appropriate for an E.A., which has wide public and intergovernmental distribution.

The meeting then came to a close.

If there are any errors and/or omissions to these minutes, please feel free to contact me.



Dan McKnight
Environmental Planner

DMcK/mef

cc: All present
J. Nuttal
P. Shaver

APPENDIX B

Summary of Comments By External Agencies and Municipalities

APPENDIX B
SUMMARY OF EXTERNAL TEAM RESPONSES

| Agency | Comment/Concern | Discussion |
|--------------------------------------|---|--|
| Ministry of Agriculture & Food | Avoid, if possible, lands with high soil capability, Classes 1 to 4 | Study Area almost entirely Class 1 and 2 lands |
| | Severances and disruption of farming operations should be minimal | Alignment followed lot lines wherever possible to minimize farm severances |
| | Tiles and tiles outlets damaged due to construction should be repaired | Construction is not imminent. However, construction effects are monitored by MTC environmental unit |
| | Alignment A1 can be considered as an appropriate alternative if the present restrictions (airport and existing cemeteries) in eliminating Alignment A cannot be overcome | Selection of A1 documented in EA report |
| | The issue of economic impacts must be considered for those farmers south of Unity Road unable to access their landlocked parcels. Alignment A1 does follow lot lines wherever possible and it is noted that no farm residences and associated buildings would be required for removal | Landlocked parcels will be obtained prior to construction All attempts have been made to minimize land-locked parcels throughout the design process. |
| Ministry of Citizenship & Culture | Would appreciate a copy of the report which deals with the factor ranking and reasoning behind the choice of Alignments A and 1 over the other alternative alignments | Separate study of agricultural impacts prepared and reviewed with representatives of OMAF The comparative evaluation of the alternative alignments, including the factors and criteria used in the detailed assessment and evaluation, and the rationale for the selection of Alignments A and 1 are documented in Chapter 5 of this report |
| | Study Design does not indicate how intensive Study Area was determined Refer to "Guidelines on the Man-Made Heritage Component of Environmental Assessments" | Determination of Study Area is discussed in Section 5 of EA report Guidelines were reviewed as part of Heritage study |

| Agency | Comment/Concern | Discussion |
|--------|--|--|
| | Surviving individual heritage features should be documented | Individual heritage features were studied and documented in a separate report available from the MTC Planning and Design Office. |
| | Undertake cultural landscape analysis to determine particular areas of sensitivity | Cultural landscape analysis undertaken and documented in Section 4 of EA report |
| | Undertake archaeological review | Archaeological review undertaken and documented in Section 4 of EA report |
| | Contact LACACs and the appropriate chapter of the Architectural Conservancy of Ontario | LACACs and Architectural Conservancies were contacted |
| | Strongly recommend rejection of Alignment C due to a significant historical site | Alignment C was rejected |
| | High potential for archaeological site discovery within 200 m of stream crossings | |
| | A1 does not impact any presently identified archaeological sites | Alternative A1 was selected |
| | The east-west section of the alignment crossing the Jerome farm to the south of Mount Hope airport may well intersect a prehistoric Iroquoian village | |
| | Site visits have confirmed that the Book Road crossing presents a significant problem | |
| | The two Book houses occupy a prominent ridge which constitutes a special historical and scenic component of the landscape | Houses have been avoided |
| | The crossing and interchange projected for this location will impose a substantial negative impact on the properties themselves, as well as on the landscape | |
| | In the absence of detailed assessment data for the technically recommended route, there is little to support the superiority of the proposed alignment over Alternative Alignment A or to indicate that this impact on the Book houses cannot be avoided | Detailed assessment documented in EA report outline selection of preferred alignment at Book Road |

| Agency | Comment/Concern | Discussion |
|---|--|---|
| | Cannot fully support this undertaking in its present form | Additional documentation provided, meetings held with representatives from MCC |
| | Proponent requested to prepare detail drawings to permit an evaluation of the precise nature of the relationship between the highway, its interchange and the subject properties | Sketch prepared of Book Road crossing and presented to MCC representatives |
| | Requested copy of archaeological assessment survey | Report will be forwarded by MTC's licenced archaeologist |
| Ministry of Colleges & Universities | No comments | |
| Ministry of Community & Social Services | Questioned process to determine impacts on people and human services delivery systems | Question answered through discussions which explained that impacts identified through public consultation and Study Team's analysis of the socio-economic environment. Analysis is documented in Chapter 4 of this report |
| Ministry of Correctional Services | No comments | |
| Ministry of Education | Concerned with impacts to school properties and possible impacts due to traffic to bus routes and student walkways | Recommended alignment requires little or no land from Seneca Unity School. Discussion with the Board indicate the minimal land requirement is acceptable |
| | Satisfied with recommended alignment | No road closures and crossing roadways are grade separated. Therefore no change to bus routes or pedestrian access. |
| Ministry of Energy | No comments | |
| Ministry of the Environment Environmental Approvals & Project Engineering Branch | Refer to Noise Assessment concerns of Operational Services Unit: 1. Evaluation criterion for route alternatives 2. Potential noise impacts of sensitive locations adjacent to route alternatives | Additional noise analysis and studies undertaken to meet MOE requirements. These are documented in the EA report |

| Agency | Comment/Concern | Discussion |
|--|--|--|
| | <p>3. Traffic sound levels within required area of investigation</p> <p>Specific areas of concern include Seneca Unity School, homes along Unity Road and White Church Road</p> | |
| Ministry of the Environment Environmental Assessment Branch | <p>Study design does not address need, will be required in the EA</p> <p>Evaluation of alternatives to the undertaking refers to alternatives of a different nature from the undertaking; alternative corridors are considered to be alternative methods</p> | <p>Need is addressed in Chapter 2 of the EA document</p> <p>Alternatives to the undertaking addressed in Chapter 5 of EA document</p> |
| Ministry of the Environment Land Use & Operational Services Section | <p>List of concerns to be addressed in the Environmental Assessment</p> <p>Suggest well monitoring</p> <p>Hamilton-Wentworth Regional Municipality has examined natural environment in northern part of study area</p> | <p>Concerns addressed through planning and evaluation process, documented in EA report</p> <p>Well monitoring program to be investigated at the time of detailed design</p> <p>Region contacted for environmental data</p> |
| Ministry of Government Services | <p>Identified a government site located on Fiddler's Green Road</p> <p>No comments to register in relation to the alternatives proposed</p> | <p>Government site not affected by Highway 6 (New)</p> |
| Haldimand-Norfolk Regional Health Unit | <p>Concerned with environmental effects to private sewage disposal systems</p> <p>Concerned with effects on surface drainage and groundwater quality for private water supplies resulting from construction</p> | <p>Effects to private sewage disposal systems, if any, will be dealt with in final design. No condition will be worsened</p> <p>Detailed drainage study to be undertaken at time of final design. No problems are anticipated. A well monitoring program will be investigated at the time of detailed design</p> |

| Agency | Comment/Concern | Discussion |
|--|--|---|
| | <p>No objections provided appropriate precautions and relocation of water supplies and sewage disposal systems completed to their approval and MOE's</p> <p>Improve access to Hamilton hospitals for emergency type health care</p> <p>No comments on the relative suitabilities of the alternatives</p> <p>No comments on recommended alignment</p> | <p>No impact expected to major water supply or sewage disposal system. Any effects to individual wells or tile beds will be dealt with in final design in cooperation with the Regional Health Units.</p> <p>Highway 6 (New) will improve access of Hamilton hospitals from Haldimand-Norfolk</p> |
| Regional Municipality of Hamilton-Wentworth Department of Health Services | No concerns | |
| Ministry of Health | <p>Public health aspects of proposal are the concern of the local District Health Councils and Health Units</p> <p>Study design is satisfactory from the standpoint of this Ministry's mandate, policies and programs</p> <p>Kindly ensure that MOH is included in future mailings of material for appraisal and comment</p> | <p>District Health Council and Health Units are included in External Team and were contacted throughout the Study</p> <p>MOH was included in all External Team mailings</p> |
| Hamilton-Wentworth District Health Council | <p>Ensure ambulance access to and from airport and to private residences along the new highway</p> <p>If highway is limited access, service roads should be provided for ambulance access</p> <p>Access to Highway 403 from Highway 6 (New) would be necessary for ambulances</p> | <p>Access is provided directly to the airport. There are no residences fronting on Highway 6 (New)</p> <p>Parallel roadway links are in existence along all of Highway 6 (New). Therefore, new service roads not required</p> <p>No existing roads are closed thus local traffic patterns are not changed</p> <p>All movements provided for by an interchange between Highway 6 (New) and Highway 403. Even in initial stage this connection will be an interchange</p> |

| Agency | Comment/Concern | Discussion |
|---|--|--|
| | Public telephones and locator devices along Highway 6 (New) would be required for emergency calls | MTC emergency patrol will provide satisfactory emergency response consistent with normal Provincial practice on similar routes |
| | Intersections should be limited and well-lighted with by-pass or traffic lights | Lighting is provided at all intersections or interchanges where warranted. Traffic signals will be provided where warranted |
| | Recommended alignment should be most direct and least hazardous route | All alignments approximately the same in length (+10%) All alignments are expected to have same basic geometric characteristics. Freeways have lowest accident rate for all types of highways |
| Ministry of Industry & Trade | No comments to make | |
| Ministry of Municipal Affairs & Housing | Parkway Belt West Plan does not affect Study Area Consult municipalities on relationship of proposals to OPs, RABs and proposed developments and document in EA report Ontario Land Corporation has no concerns | Meetings held with planning staff of all affected municipalities |
| Ministry of Natural Resources Central Region | Formal Ministry position will be co-ordinated out of Regional Office. It is important that requests for written comments continue to be sent to this office Would like to review evaluation factors and selection criteria Staff concur with the criteria employed to assess the impact on natural environment features. Impact values are realistic Modifications to alignment of alternative A1 have reduced impacts on MNR resource interests, particularly forested areas | Central Region included in all External Team mailings Meeting held to review all natural environment data, analyses and studies |

| Agency | Comment/Concern | Discussion |
|---|--|--|
| Ministry of Natural Resources Cambridge District | A portion of a licenced extraction operation (part of Lot 45, Concession 3) will be acquired to construct the interchange at Highway 403. Recommend discussion of plans for extraction and rehabilitation with the pit operator | Pit operator had moved and thus could not be contacted. Will be dealt with in detailed design or at the time of property negotiations |
| | Satisfied that preferred alternative will result in minimal impacts on their resource interests | |
| | Recommend minor modification to preferred alignment in northwestern side of the designated section (at Lots 45 and 46, Concession 4, Ancaster) to prevent fragmentation of a good quality woodlot | Modifications were studied but could not be implemented due to conflict with Ontario Hydro facilities and poor highway geometrics |
| | Staff wish to discuss measures to minimize disruption on waterfowl habitats during construction | Meeting held with MNR representative. This issue will be addressed in the Design and Construction report submitted to MOE, a minimum of 30 days prior to construction |
| | Concerns: | |
| | Mineral Aggregates: Corridor alternatives should minimize impacts on the sand and gravel resource in the northwestern part of the study area where two licensed pits are located | Pits not near any of the alternatives considered and thus are unaffected |
| | Forest Resources: No Woodlot Improvement Agreements in Study Area, but there is a variety of high quality woodlots which should be recognized in corridor alternative and evaluation factors; phone conversations confirmed that the 5 class rankings of woodlots provided on 1:50,000 maps can be inaccurate and closer inspections are preferred | Detailed field investigations undertaken of woodlots and other natural environmental features. Woodlots and Waterfowl nesting areas were two criteria used in comparing alternatives |
| | Fish and Wildlife: Reduce impacts through design and construction of the crossing of Welland River and Twenty Mile Creek; Corridor alternatives should avoid waterfowl nesting, brooding, and staging area | Construction process and design options will be addressed during final design and reviewed with MNR |
| | Request additional input to Activities 7 and 12 | Meetings held with MNR staff |

| Agency | Comment/Concern | Discussion |
|---|---|---|
| Ministry of Natural Resources Niagara District | Project appears to have minimal impact on fish and wildlife, parks or forestry interests of the Ministry | |
| | Three Woodlot Improvement Agreements are in the Study Area | These three woodlots not affected by Highway 6 (New) |
| | Potential for fisheries and wildlife in the general area is concentrated along the Grand River south of the Study Area | Grand River lies outside Study Area |
| | Gypsum mines in the area of the Caledonia Bypass could present a hazard because of weakened shales | Extraction maps reviewed with Domtar and representative of MNR. No mining has occurred or is planned for in the immediate vicinity of Highway 6 (New) |
| | Further studies may be required to determine soils suitability for embankment construction and to confirm potential for subsidence with any proposed route | Preliminary soils investigation undertaken |
| | | Detailed investigations will be carried out during detailed design. |
| Ministry of Tourism & Recreation | Adequate and appropriate signing on the new highway for tourism facilities should be included in the project design and implementation | Signing of tourism facilities to be addressed at time of final design |
| Ministry of Treasury & Economics | No comments or concerns | |
| Grand River Conservation Authority | Sent maps of Priority Management Areas for control of Rural Sediment Losses to Streams, Potential Annual Average Soil Loss from Rural Areas and Field To Stream Delivery Ratios | |
| | No watercourses within the Study Area that have Watershed or regional significance | |
| | There are sites with potential soil and erosion and sediment delivery problems in the Study Area | |
| | Above standard practices for control of erosion and sediment may be required for certain stream crossings | Stream crossings to be studied at the time of detailed design. Conservation Authority will be closely involved in design |

| Agency | Comment/Concern | Discussion |
|---|--|--|
| | Removal of treed areas and naturally vegetated areas should be minimized | Area of woodlot removed was a factor in the comparative evaluation of alternatives and is documented in Chapter 5 of the EA report |
| | Alignment A1 has apparent advantages. There are fewer stream crossings and the amounts of natural and forest vegetation to be removed are minimized | Alternative A1 was selected |
| | Require detailed site plans for stream crossings | Stream crossings to be studied at the time of final design. Conservation Authority will be closely involved in design |
| | Request application for permit under Authority's Fill, Construction and Alteration to Waterways Regulation at presubmission of final report stage | Conservation Authority will be made aware of those issues at time of detailed design |
| | Prefer Alternative Alignment 1 as it would have the least impact or effect on the Seneca Creek Watershed | Alternative 1 was selected |
| | Preliminary Site plans and designs for stream crossings should be circulated to the Authority for comment at the detailed planning stage | Site plan of stream crossings reviewed with Authority prior to EA submission |
| | Requested survey of rare and significant plant species | Will be undertaken at time of detail design |
| Hamilton Region Conservation Authority | Identified flood plain lands associated with Tiffany and Ancaster Creeks | |
| | Provided information from Hamilton-Wentworth Region Environmentally Sensitive Areas Study that indicates that the Ancaster Creek headwaters and the Hamilton Golf and Country Club are environmentally sensitive areas | ESA's documented in EA report and are not affected by Highway 6 (New) |
| | No basic objections to selected alignment | |

| Agency | Comment/Concern | Discussion |
|---|--|---|
| | <p>Various technical concerns include:</p> <ul style="list-style-type: none"> - Hydraulic characteristics of the flood plain near the interchange ramp at Highway 403 should be maintained through balanced cut and fill - MTC should investigate and implement appropriate stormwater management techniques with a view to achieving zero increase in runoff to Ancaster Creek - MTC should implement appropriate erosion and situation control measures for the complete duration of construction and regrading to prevent siltation of creek channels and culverts downstream of the site | <p>Detailed drainage study to be undertaken at time of final design.</p> <p>Detailed drainage study to be undertaken at time of detail design. Conservation Authority will be involved during detail design</p> <p>Mitigation techniques will be used to reduce intrusion of silt and runoff in watercourses during and after construction of crossings. Techniques will be discussed with the Authority at the time of detailed design</p> |
| <p>The Niagara Peninsula Conservation Authority</p> | <p>Flood plain mapping available for Twenty Mile Creek and Welland River (Chippewa Creek)</p> <p>Recent crossings of these waterways by airport runway expansion, for example, have been designed to accommodate provincial flood plain criteria</p> <p>Recommends that:</p> <ol style="list-style-type: none"> 1. the crossing of the main branch of the Welland River be designed to accommodate 100 year flows 2. silt control measures are installed and maintained during the construction of all crossings 3. the project should be timed for construction during a low flow period (late summer) and | <p>Detailed drainage study to be undertaken at time of final design; preliminary drainage study was reviewed with the Authority</p> <p>Mitigation techniques will be used to reduce intrusion of silt and runoff during and after construction of crossings. Details to be determined at the time of final design</p> <p>Construction timing is not imminent and is not known. This will be considered in the contract documents and will be discussed with the Authority prior to finalizing the detailed design</p> |

| Agency | Comment/Concern | Discussion |
|--------------------------------------|---|--|
| | 4. no fill material be placed within a valley of any waterway, except when this activity is incorporated into the drainage plans | Issue will be addressed (in conjunction with the Authority) during final design |
| Niagara Escarpment Commission | <p>Alternative alignments not located within the Niagara Escarpment Plan</p> <p>Landscape Evaluation Study is available</p> <p>Low or Very Low Scenic Resources within the Study Area</p> <p>No special Niagara Escarpment issues or concerns appear to arise out of this proposal provided suitable design, siting and construction guidelines are followed</p> <p>Need and rationale not covered in detail as an explicit part of the study process</p> | <p>Requested Landscape Evaluation Study, which was used as part of visual analysis</p> <p>Need and rationale is addressed in Chapter 2 of the EA document</p> |
| Ontario Hydro | <p>The proposed alignment will impact on our existing transmission facilities at the crossings</p> <p>Extent of impacts cannot be fully assessed until the detailed design and finalized alignment</p> <p>Expect that Ontario Hydro will be reimbursed for all costs incurred in modifying the existing transmission facilities to accommodate the proposed alignment</p> | <p>Several meetings held with Ontario Hydro to determine general feasibility of crossing and order of magnitude costs for plant relocation</p> <p>Crossing at 230 kw line south of Book Road judged to be infeasible</p> <p>Hydro will be involved in final design where necessary</p> <p>Standard MTC practice will occur with regards to utility relocations</p> |
| Ontario Waste Management Corporation | <p>No overlap with ONMC activities</p> <p>No comments</p> | |

| Agency | Comment/Concern | Discussion |
|---|--|---|
| Environment Canada | No concerns; no further involvement required | |
| Indian & Northern Affairs Canada | Land claims under negotiation No concerns or comments | Claims are before the Federal Government |
| Ontario Provincial Police Ministry of the Solicitor-General | No objection to any of the proposed alignments Main concerns are accident prevention and at grade intersections with wide medians Access to Airport Road highly desirable Long-term plans necessitate relocation of all passenger and air cargo operation to the north side. Highway 6 (New) should facilitate access to the north side while maintaining access to the south side Concurs with the recommended alignment of the highway and the propensity to provide regional access to the airport Request direct connection between Highway 6 (New) and existing access to Airport Road | Initial stage intersections will not have wide medians High standard geometrics are used in design Interchange provided to Airport Road to serve the south side and at Book Road for the north side |
| Town of Haldimand | Truck traffic continues to use existing Highway 6 through the Town of Caledonia, rather than use the recently completed By-pass | An objective of Highway 6 (New) is to increase use of the Caledonia By-pass, thus reducing traffic in the Town of Caledonia |
| City of Hamilton | Construct Highway 6 (New) as far south as Airport Road as soon as possible | First stage for Highway 6 (New) will be to the Airport Road extension at Butter Road |

| Agency | Comment/Concern | Discussion |
|-----------------------|---|---|
| Town of Ancaster | Urges MTC to proceed with Highway 6 (New) | Timing of construction unknown at this time |
| | Impacts to farm operations and soil types should be considered in selecting the alignment for Highway 6 (New) | Each alternative was evaluated on the basis of several agricultural impact factors, including soil classification and farm severances |
| | Only an 80m R-O-W should be purchased | An 80 m basic R-O-W is employed (normal standard would be 100 m) |
| | Surplus lands should be offered for sale to adjacent owners | Standard MTC policy is to offer surplus land-locked parcels to adjacent owners |
| | Provide interchange or overpasses at Book Road and Butter Road | Interchange to be provided at Book Road and an overpass at Butter Road |
| Township of Glanbrook | MTC should consider buying properties adjacent to Highway 6 (New) where there will be severe proximity impacts | MTC policy is to purchase only property required for the R-O-W |
| | Supports Alignment 2 over 1 as it provides a greater distance for further industrial/commercial/residential expansion | A presentation was made to Council outlining the rationale for Alignment 1 |
| | White Church Road be maintained for east-west travel and that the interchange to existing Highway 6 be located south of White Church Road to allow development in Mount Hope to extend southerly to White Church Road | Alternative interchange configurations were prepared and presented to the Council. The recommended alignment does not affect east-west travel on White Church Road, is located south of White Church Road and allows development in Mount Hope to extend southerly to White Church Road |
| | Requested a grade separated left turn to existing Highway 6 | A grade separation was examined, but is not proposed as a traffic signal can accommodate the forecasted traffic volumes and a significant amount of land would be required for a grade separated left turn |
| | Requested grade separations at Townline, Leeming and Chippewa Roads | Overpasses will be provided |
| | Council forwarded a copy of a petition received from residents objecting to the realignment of existing Highway 6 | Letters outlining the effects of the realignment of existing Highway 6 were sent to all who signed the petition |

| Agency | Comment/Concern | Discussion |
|--|--|---|
| Regional Municipality of Hamilton-Wentworth | Urges MTC to construct Highway 6 (New) to the airport | First stage of Highway 6 (New) will be to the Airport Road extension at Butter Road |

APPENDIX C

First Series of Public Information Centres



Highway 6 (New)
HAMILTON TO CALEDONIA
ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Results of the
First Series of
Public Information
Centres

DILLON

June 1985

TABLE OF CONTENTS

| | PAGE |
|--|------|
| 1. INTRODUCTION | 1 |
| 2. CENTRE ORGANIZATION | 2 |
| 3. CONTACT WITH ELECTED REPRESENTATIVES | 5 |
| 4. MAJOR ISSUES | 6 |
| 4.1 Need and Justification | 6 |
| 4.2 Farm Impacts | 6 |
| 4.3 Direct Property Damage | 6 |
| 4.4 Indirect Property Damage and Proximity Effects | 7 |
| 4.5 Effects on the Unity Road Hamlet | 7 |
| 4.6 Connections to Highway 6 (New) and Highway 53 | 7 |
| 4.7 Road Closures | 8 |
| 4.8 Historical Buildings | 8 |
| 4.9 Property Sales | 8 |
| 4.10 Staging and Timing | 8 |

APPENDICES

APPENDIX A - Listing of Special Interest Groups and Members of the Public who Received Specific Letters Informing of the Public Information Centres - June 1985

APPENDIX B - Copies of Text Displays used at the Information Centres - June 1985

APPENDIX C - Records of Presentations to Municipal Elected Representatives - June 10, 17, 18, 1985

APPENDIX D - PUBLIC COMMENTS

- 1) Glanford Community Centre - June 24, 1985
- 2) Marritt Hall, Ancaster - June 25, 1985

1. INTRODUCTION

The first round of public information centres for the Highway 6 New - Hamilton to Caledonia Route Location and Preliminary Design Study were held as follows:

- Monday, 24 June 1985 at the Glanford Community Hall 3027 Homestead Drive, Mount Hope, Ontario;
- Tuesday, 25 June 1985, Marritt Hall, Ancaster Fair Grounds, Highway 53, Ancaster.

The centres were open to the general public from 2 p.m. to 5 p.m. and from 7 p.m. to 9 p.m. each day.

On the 24th of June the centre was also open to various provincial ministries and agencies. At that session the project was presented to these organizations by MTC and consultant staff.

The main purposes of this series of centres were to:

- review study progress to date;
- define the intensive study area;
- identify preliminary corridors being considered and obtain comments on them;
- discuss the future study schedule.

2. CENTRE ORGANIZATION

The information centres were advertised through a brochure distributed within the general study area. A copy of the brochure is shown on Exhibit 1.

Advertisements were also run in local newspapers as follows:

- Regional News This Week - Wednesday, 19 June 1985;
- Ancaster Journal - Wednesday, 19 June 1985;
- Grand River Sachen - Wednesday, 19 June 1985;
- Hamilton Spectator - Wednesday, 19 June 1985.

A copy of the advertisement is included as Exhibit 2.

Local interest groups and individuals who had previously submitted comments or questions on the project were sent specific brochures. Appendix No. A provides a listing of all people who received special copies of the brochures in this way.

Displays and exhibits used at the information centres were as follows:

- 1:5,000 mosaics (plans) of the feasible alternative alignments together with the two abandoned alternative alignments;

Future Schedule

For the next series of public information centres, the anticipated general study schedule is as follows:

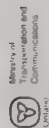
1. Public Information Centres to review the project, the evaluation of the feasible alternative, and the preferred alternative - Fall 1985;
2. Public Information Centres illustrating the preliminary design of the preferred alignment (i.e. showing property, bridges, etc.) - Spring 1986;
3. Study area and subsection of formal Environmental Assessment Report - Fall 1988

Additional Information

Interested parties can obtain additional information from either of the following individuals:

- Mr. Brian Shaver, P. Eng.
Manager, Planning and Design Section
Ontario Ministry of Transportation and Communications
4440 Yonge Street, Willowdale, Ontario M2N 6E9
Tel. (416) 224-7651
- Mr. Ian Williams, P. Eng.
Manager, Engineering
M.M. Tilton Limited
47 Shppard Avenue East, Willowdale, Ontario M2N 6H5
Tel. (416) 223-4636
- Mr. Brian Ogden
Environmental Coordinator - Planning and Design Section
Ontario Ministry of Transportation and Communications
4440 Yonge Street, Willowdale, Ontario M2N 6E9
Tel. (416) 224-7678

Written comments on the project are also invited



Highway 6 (New) HAMILTON TO CALEDONIA ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Public Information Centres

FIRST SERIES

Background

During the late 1960's and early 1970's several studies and major development proposals led to the identification of a need for a new route between the Hamilton and Caledonia areas. The Ontario Ministry of Transportation and Highways (New) Naniticoke to Hamilton Joint Use Corridor Study (1971) was the first study to identify an acceptable route for a new joint use corridor between the two areas, such as hydro and pipelines) between the Naniticoke area and Hamilton.

That report recommended an alignment for a new route between Naniticoke and Caledonia, including the now known as the Hamilton-Wentworth official plan was completed and plans for the expansion of the Mount Hope Airport site were determined.

Now that these issues have been resolved the Ontario Ministry of Transportation and Highways (New) Naniticoke to Hamilton Joint Use Corridor Study (Hamilton to Caledonia) project is being initiated.

In the event that a connection to Highway 403 might be selected in the future, a designation was laid down east of the Highway 403 and Book Road for the protection of property. No property has been acquired in conjunction with this designation.

Current Status

Since the following work has been undertaken on the Highway 6 (New) Study:

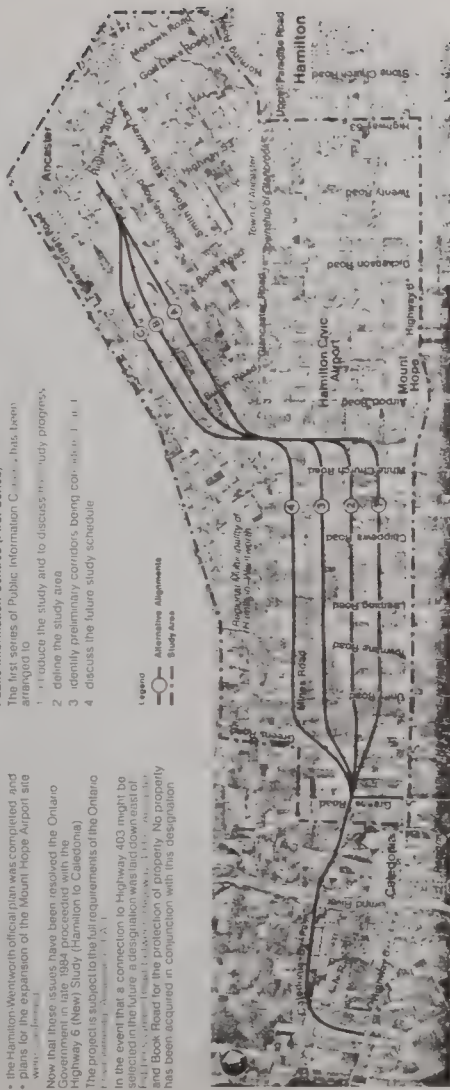
- Identification of Preliminary Alignments
- Generation of Preliminary Alignments
- Identification of Potential Right-of-Way

Alternatives Being Considered

The following alternatives are being considered for the Highway 6 (New) Study:

Public Information Centres (First Series)

- The first series of Public Information Centres has been arranged to:
1. introduce the study and to discuss the study progress;
 2. define the study area;
 3. identify preliminary corridors being considered;
 4. discuss the future study schedule.



ONTARIO GOVERNMENT NOTICE

HIGHWAY 6 (NEW) HAMILTON TO CALEDONIA PUBLIC INFORMATION CENTRES (FIRST SERIES)

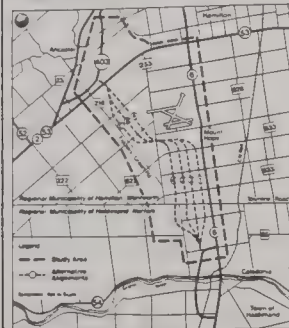
The first series of Public Information Centres has been arranged to:

1. introduce the study and to discuss the study progress
2. define the study area
3. identify preliminary corridors being considered; and
4. discuss the future study schedule.

The Centres are as follows:

- | | |
|--|--|
| 1 Monday 24 June 1985 2:00 p.m. to 5:00 p.m. and 7:00 p.m. to 9:00 p.m. Glanford Community Hall 3027 Homestead Drive Mount Hope Ontario | 2 Tuesday 25 June 1985 2:00 p.m. to 5:00 p.m. and 7:00 p.m. to 9:00 p.m. Merritt Hall Ancaster Fairgrounds Highway 53 Ancaster Ontario |
|--|--|

The project is subject to the full requirements of the Ontario Environmental Assessment Act.



For further information please contact:

Mr. Peter Shaver, P. Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale Ontario M2N 6E9
Phone: 224-7661

Mr. Ian Williams, P. Eng.
Project Manager
M.M. Dillon Limited
47 Sheppard Avenue East, Willowdale Ontario M2N 6H5
Phone: 229-4545

Mr. Brian Ogden
Environment, Coordinator - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale Ontario M2N 6E9
Phone: 224-7578

Written comments are invited



Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Public Information Centre

FIRST SERIES

Survey of Agricultural Operations

Name _____ Date _____ 19__

Address _____

Township _____ Lot _____ Concession _____ Telephone _____

1. Areas Involved

(a) How many acres do you farm? _____ acres

(b) Where is your main access point? _____

2. Land Tenure

(a) How much of this land do you own or rent? Own _____ acres

rent _____ acres

For rented lands, who is the registered owner?

Name _____ Telephone _____

Address _____

(b) How long have you been farming these lands? Owned land _____ years

rented land _____ years

3. Farming Activities

(a) How would you describe the main farming activity taking place on your farm, including any portions that you rent? (please check one)

☐ Cash Crop

☐ Mixed Crop and Livestock

☐ Specialist Livestock:

☐ dairy ☐ beef cow ☐ sow, farrow-to-finish ☐ feeder hogs ☐ sow, weaner ☐ poultry

☐ Other (please explain) _____

(b) How many acres are workable? _____ acres

(c) How many acres are permanent or rough pasture? _____ acres

(d) How many acres are wooded or in swamp? _____ acres

(e) How many head of livestock do you keep?

_____ Dairy (cows)

_____ Dairy (heifers, calves up to 1 year)

_____ Beef (cows)

_____ Beef (heifers, steers, calves up to 1 year)

_____ Swine (sows)

_____ Swine (weaners, feeders)

_____ Other (specify) _____

EXHIBIT 3



Ministry of
Transportation and
Communications

- overall area maps showing the entire Hamilton to Nanticoke corridor with the earlier alternative corridors including those abandoned;
- various working maps used to identify social and natural environmental features;
- various text displays which included:
 - . the objectives of the Highway 6 (New) project;
 - . a comparison of the various alternative corridors with these objectives;
 - . the study schedule;
- record sheets of identified historical buildings in the Study Area.

Copies of the various text displays used are included in this report in Appendix B.

Comment sheets were available for members of the public to note their comments. People were invited to either mail the sheets in or leave them at the centre. Sheets were also filled out by various members of the study team during discussions with members of the public. Specific questionnaires were available for active farmers in the area (see Exhibit 3). Completed copies of the comment sheets are available upon request from the MTC Regional Office.

Members of the MTC project staff and the consultant staff were in attendance at all times.

4. Machinery Movements

- (a) Do you have to move farm machinery along any of the roadways in the study area at any time during the year? (please check)

☐ Yes☐ No

- (b) If yes, which roads are these? _____

5. Please provide your comments on any effects of the alignments on your farming operation.

[illegible]

Attendance at the centres was excellent and was estimated (based upon the provided sign-in sheet and study team members observations) as follows:

- 24 June 1985 - 150

- 25 June 1985 - 150

- Total - 300

3. CONTACT WITH ELECTED REPRESENTATIVES

Prior to this series of information centres, presentations were held with various elected representatives. These meetings were as follows:

- Monday, June 10, 1985 - Town of Haldimand Council
- Monday, June 17, 1985 - Town of Glanbrook Council
- Monday, June 17, 1985 - Town of Ancaster Committee of Whole
- Tuesday, June 18, 1985 - Engineering Committee to the Regional Municipality of Haldimand-Norfolk

The purpose of these meetings was to allow the elected representatives to provide comments as well as to show to them data that would be presented at the public information centres.

NOTE: Staff representatives for the City of Hamilton and the Regional Municipality of Hamilton-Wentworth felt that at this stage of the project it was unnecessary to hold meetings with the councils of these Municipalities)

Minutes of the various presentations to the elected representatives are included in Appendix C.

Copies of memorandum summarizing comments made by members of the public are included in Appendix D.

4. MAJOR ISSUES

Based on analysis of the comments received the major issues raised by member of the public are identified below. It should be noted that in addition to the issues related to Highway 6 (New) there were many comments raised about the airport expansion plans. These issues were answered by the Transport Canada official in attendance at the information centres. No further dimension on this matter is included in this report.

4.1 Need and Justification

Several people observed that as there is no existing serious traffic congestion in the area, they couldn't understand the need for the new facility. People were of the opinion that Nanticoke will not develop to its originally anticipated level. Neither will the Hamilton Airport be used as much as has been forecasted.

4.2 Farm Impacts

Farming is the major land use in the area, with 70% of the study area being Class I Agricultural Land. Farm impacts in all aspects including: direct damage, severance, effect on operations, and indirect effects, was probably the most significant issue raised.

4.3 Direct Property Damage

In addition to impacts on farms, many people expressed serious concern over direct property damage at individual residences.

4.4 Indirect Property Damage and Proximity Effects

Many people noted that the proximity effects of the new highway were also very important. A major concern in this regard was that of a residence which may not be directly affected by the new highway, but which after construction would remain close to the new road. Under current MTC policy such properties would not be purchased by the Ministry as part of the highway project.

Certain residents in the area of the proposed Highway 6 (New)/Highway 403 connection voiced concerns over possible highway-generated noise levels.

4.5 Effects on the Unity Road Hamlet

People noted that three of the four alternatives cross Unity Road at the identified Hamlet of Unity road. The effects on this small community were noted as a major consideration. The proximity of the new Highway to the school on Unity road was also noted as a concern with respect to potential safety problems.

4.6 Connections to Highway 6 (New) and Highway 53

Several people felt that connections should be provided between Highway 6 (New) and Highway 53. These people noted that such connections would unload local roads, particularly Fiddlers Green Road.

4.7 Road Closures

The displays noted that consideration was being given to closing certain local roads at their intersection with the Highway 6 (New) Route. Many people objected strongly to the closing of any through roads.

4.8 Historical Buildings

Many people were aware of the importance of historical farm houses and other residences in the area.

4.9 Property Sales

Several people noted that in view of this study it would not be possible for them to sell their lands. Some residents also expressed the view that the Ministry's policy of designating a route without purchasing property is unfair as the owner cannot then sell his property.

4.10 Staging and Timing

There were many questions raised about the timing of construction and the construction staging sequence that will be adopted.

Listing of special interest groups and members of
the public who received specific letters
informing of the Public Information Centres

June 1985

Ms. Ann Hughson
Office Administrator
Architectural Conservancy of Ontario
191 College Street
Toronto, Ontario
M5T 1P9

■

Mrs. Heather R. Broadbent
President
Ontario Historical Society
78 Dunloe Road, Room 204
Toronto, Ontario
M5P 2T6

■

Mr. Harold Lampman
L.A.C.A.C. Chairperson
Town of Ancaster
c/o Town Clerk
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

■

L.A.C.A.C. Chairperson
Township of Glanbrook
c/o Township Clerk
P.O. Box 130
Mount Hope, Ontario
L0I 1W0

■

Mr. Howard Mark
L.A.C.A.C. Chairperson
City of Hamilton
c/o City Clerk
71 Main Street West
Hamilton, Ontario
L8N 3T4

■

Ms. Mary E. Martindale
L.A.C.A.C. Chairperson
Town of Haldimand
c/o Town Clerk
P.O. Box 400
Cayuga, Ontario
N0A 1E0

■

Mrs. H. Broadbend, President
Ontario Historical Society
78 Dunlop Road
Room 204
Toronto, Ontario
M5P 2T6

■
Mr. D. Kennedy, Chairman
Sierra Club of Ontario
47 Colborne Street
Toronto, Ontario
M5E 1E3

■
Mr. T. Ruzza
863 Main Street East
Hamilton, Ontario
L8M 1M2

■
Mr. Bill Kronas
70 Emerald Street South
Hamilton, Ontario
L8N 2V3

■
Mr. Stuart Jones
Mines Road
R.R. #2
Caledonia, Ontario
NOA 1A0

■

Mr. P.J. Stokes
Architectural Conservancy of Ontario
191 College Street
Toronto, Ontario
M5T 1P7

■
Ms. P. Heppes
Canadian Nature Federation
Suite 203
75 Albert Street
Ottawa, Ontario
K1P 6G1

■
Mr. H. Clare, Treasurer
Conservation Council of Ontario
Suite 202
74 Victoria Street
Toronto, Ontario
M5C 2A5

■
Mr. R.L. Renwick
Provincial Manager
Ducks Unlimited
Unit 10
240 Bayview Drive
Barrie, Ontario
L4N 4Y8

■
Mr. G. Arras
Federation of Ontario Naturalists
355 Lesmill Road
Don Mills, Ontario
M3B 2W8

■
Mr. C. Sauriol, Exec. Director
Nature Conservancy of Canada
2180 Yonge Street
Suite 1704
Toronto, Ontario
M4S 2E7

■
Ontario Federation of Agriculture
491 Eglinton Avenue West
Suite 500
Toronto, Ontario
M5N 3A2

■

The Chairperson
Ancaster Township Historical Society
P.O. Box 7163
Ancaster, Ontario
L9G 3L4

■

The Chairperson
Head of the Lake Historical Society
P.O. Box 896
Hamilton, Ontario
L8N 3P6

■

Mrs. R.C. Walker
Tweedsmuir History Curator
Hamilton, Ontario
R.R. #1
St. George, Ontario
NOE 1N0

■

The Curator
Caledonia Museum
Caithness Street West
Caledonia, Ontario
NOA 1A0

■

The Curator
Haldimand County Museum
County Court House Park
Cayuga, Ontario
NOA 1E0

■

Hamilton-Wentworth
Federation of Agriculture
ATTENTION: John Yovanov,
President
#2 Branchton, Ontario
NOB 1LO

■

Hamilton-Wentworth
Federation of Agriculture
ATTENTION: Joan Lowden,
Secretary
#2 Mount Hope, Ontario
LOR 1W0

■

Christian Farmers Association
of Wentworth-Brant
ATTENTION: Harry Bootsma,
President

#1 Brantford, Ontario
N3T 5L4

■

Christian Farmers Association
of Wentworth-Brant
ATTENTION: Ralph Schuurman,
Secretary
#2 Branchton, Ontario
NOB 1LO

■

D. Ross Ferguson
57 Amberly Boulevard
Ancaster, Ontario
L9G 3S1

■

Cronkwright Transport Limited

ATTENTION: Mr. James Wood

Operations Manager

P.O. 551

Simcoe, Ontario

N3Y 4N8

■

Bruce R. Smith Limited

ATTENTION: Mr. D. Rowntree

Traffic Manager

R.R. #2

Simcoe, Ontario

N3Y 4K1

■

Slack Transport Limited

ATTENTION: Mr. F. Walker

Traffic Manager

P.O. Box 579

Caledonia, Ontario

NOA 1A0

■

Nelson Steel Company

ATTENTION: Mr. W. McCloy

Plant Superintendent

19 Hawk Street

Nanticoke, Ontario

■

Air Products

ATTENTION: Mr. F. Adams, CITT Distribution

Terminal Manager

Division of Stearns Catalytic Limited

Lake Erie Industrial Park

Regional Road #3

P.O. Box 300

Nanticoke, Ontario

NOA 1L0

■

Stelco

ATTENTION: Mr. W.H. Sheffield,

Transportation Manager - Central Region

Stelco Tower

Hamilton, Ontario

LSN 3T1

■

Domtar Construction Materials

ATTENTION: Mr. J.F. Card

Works Manager

P.O. Box 250

Caledonia, Ontario

■

Mr. Henry Kruis

R.R. #2

Caledonia, Ontario

NOA 1A0

■

Ms. Jeannie McNaughton

Planner

Ministry of Municipal Affairs

& Housing

Plans Administration Branch

777 Bay Street

14th Floor

M5G 2E5

■

Mr. Sam Colaicovo

61 Kent Street North

Simcoe, Ontario

N3Y 3W1

■

Ms. Arlene Johnson

4405 Glancaster Road

Mount Hope, Ontario

LOR 1W0

■

Mr. Edward Granasiuk

285 Shoreacres Road

Burlington, Ontario

L7L 2H3

■

Mr. John Pasternak

R.R. #2

Caledonia, Ontario

NAO 1A0

■

Haldimand-Norfolk Federation

of Agriculture

ATTENTION: Peter Ondrich, President

R.R. #3

Hagersville, Ontario

NOA 1H0

■

Haldimand-Norfolk Federation

of Agriculture

ATTENTION: Sheilagh Moerschfelaer

R.R. #1

Selkirk, Ontario

NOA 1P0

■

Standard Aggregates

ATTENTION: Mr. B. Buckley
Sales Superintendent
Haldimand Quarry
P.O. Box 29
Hagersville, Ontario

■

Verspeeten Cartage Limited
ATTENTION: Mr. R. Verspeeten
Traffic Manager
67 Dalton Road
Delhi, Ontario
N4B 1B4

■

Iveys Incorporated
ATTENTION: Mr. Walter C. Long
Roselane Drive
Port Dover, Ontario
NOA 1N0

■

Texaco Canada Incorporated
ATTENTION: Mr. J.E. Moss
Superintendent Sales Terminal
P.O. Box 160
Jarvis, Ontario
NOA 1J0

■

Laidlaw Transport Limited
ATTENTION: Mr. Henri Vandenbussche
Terminal Manager
P.O. Box 430
Hagersville, Ontario
NOA 1H0

■

McBurney Transport Limited
P.O. Box 427
ATTENTION: Mr. Keith McBurney
Hagersville, Ontario
NOA 1H0

■

Cayuga Aggregate & Hauler
ATTENTION: W.R. McKenzie, President
R.R. #7
Simcoe, Ontario

■

Copies of text displays used at the
Public Information Centres

June 1985

Preliminary Evaluation Of Alternatives

| Identified Issues | Alternatives | | | | | | | | | |
|---|------------------------------|------|----------|------|----------|------------------------------|----------|------|----------|------|
| | Southeast of Glancaster Road | | | | | Northwest of Glancaster Road | | | | |
| Residences Number Affected | 1 | 2 | 3 | 4 | | A | B | C | | |
| Natural Features : | | | | | | | | | | |
| Woodlots - Number Affected | 3 | 6 | 4 | 1 | | 4 | 6 | 4 | | |
| Waterfowl Area - Number Affected | 5 | 6 | 6 | 3 | | 3 | 2 | 2 | | |
| Aquatic - Number of Major Streams Crossed | 1 | 1 | 0 | 0 | | 0 | 0 | 0 | | |
| Heritage Features - Number Affected | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | |
| Farms - Number of Severances | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | | |
| Land Capability : | 17 | 12 | 13 | 17 | | 7 | 12 | 15 | | |
| Class 1 and Class 1 Constrained - Number of Hectares Removed | 72 | 80 | 76 | 77 | | 26 | 30 | 34 | | |
| Class 2 Soil Suitable for Specialty Crops - Number of Hectares Removed | 0 | 0 | 0 | 0 | | 6 | 10 | 10 | | |
| Remaining Classes 2 and 3 - Number of Hectares Removed | 8 | 2 | 8 | 9 | | 14 | 12 | 12 | | |
| Cost | \$30-35M | Good | \$30-35M | Fair | \$30-35M | Acceptable | \$30-35M | Good | \$30-35M | Good |
| Traffic Service | | | | | | | | | | |

Highway 6 (New)

HAMILTON TO CALEDONIA
ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Transportation Objectives

- Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
- Increase use of the Caledonia By-Pass.
- Improve access and provide flexibility for development in Townsend / Nanticoke.
- Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
- Select a route which can be stage - constructed in a realistic and economical manner.

Comparison of Corridors to Transportation Objectives

| Study Objective | Provides access from the airport to the west end of Hamilton and to Hamilton itself | Increases use of the existing Hamilton By-Pass | Improve access and development in Townsend / Nanticoke | Improve access to the lower Hamilton, such access currently provided by the local road system | Select a route which can be staged - constructed in a realistic and economical manner |
|-------------------------|---|--|---|---|---|
| West Corridor | Provides a direct connection from the airport to the provincial freeway system | All corridors the same in the long run | Provides good access to Townsend / Nanticoke | Good access to the industrial area of Hamilton (assuming the Hamilton Perimeter is in) | Can be staged independently N-S / E-W |
| Central Corridor | Provides an in-direct connection from the airport to the provincial freeway system (assuming the N-S / E-W is in) | All corridors the same in the long run | Provides good access to Townsend / Nanticoke (assuming the N-S / E-W is in) | Good access to the industrial area of Hamilton (assuming the N-S / E-W is in) | Difficult to stage on the airport |
| East Corridor | Provides an in-direct connection from the airport to the provincial freeway system (assuming the N-S / E-W is in) | All corridors the same in the long run | Provides good access to Townsend / Nanticoke (assuming the N-S / E-W is in) | Very good access to the industrial area of lower Hamilton (assuming the N-S / E-W is in) | Can be staged to improve use of the Caledonia By-Pass |

LEGEND

Denotes key factors in selecting the west corridor
 N-S/E-W Blends for the Region's proposed North - South Parkway and East - West Arterial

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

General Steps in the Environmental Assessment Process

(If you require more information please ask)

1. The route location and planning study involves all interested agencies, groups and the general public through public information centres.
2. The results of the study are documented in an environmental assessment (EA) Report.
3. The EA Report is formally submitted to the Ministry of the Environment (MOE) who then circulate the report to all provincial Ministries and agencies for review and comment.
4. These comments are compiled by the MOE into an official government review document.
5. The MOE then make the EA Report and the government review available to the public and municipalities.
6. The public then have 30 days to submit comments to the MOE.
7. Following receipt and review of public comments the MOE can either :
 - approve the EA unconditionally,
 - approve the EA with conditions, or
 - call a hearing before the environmental assessment Board (EAB).
8. If a hearing is held the EAB can recommend approval or non-approval of the project.
9. Final approval is the responsibility of the Minister of the Environment with Cabinet approval.

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Future Schedule

Following the first series of public information centres, the anticipated general study schedule is as follows

1. Public Information Centres to review the detailed evaluation of the feasible alternatives leading to the preferred alternative – Fall 1985.
2. Public Information Centres illustrating the preliminary design of the preferred alignment (i.e. showing property impacts, etc.) – Spring 1986.
3. Study completion and submission of formal Environmental Assessment Report – Fall 1986

Additional Information

Interested parties can obtain additional information from either of the following individuals

Mr. Peter Shaver, P. Eng.

Project Manager – Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9
Phone 224-7661

Mr. Ian Williams, P. Eng.
Project Manager

M.M. Dillon Limited
47 Sheppard Avenue East, Willowdale, Ontario M2N 6H5
Phone 229-4646

Mr. Brian Ogden
Environmental Coordinator – Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9
Phone 224-7578

Written comments on the project are also invited

Records of presentations to Municipal Elected Representatives

June 10, 17 and 18 1985

MEMO TO: File

CC: P. Shaver, B. Ogden, F. Leech, J. Tennyson
J. Horton

FROM: I. Williams

SUBJECT: Highway 6 (New) Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE NO: 9576-01

DATE: 20 June 1985

PRESENTATION TO THE TOWN OF ANCASTER

The first presentation of this project to the Town of Ancaster (Council Committee of Whole) was held on the evening of 17 June 1985.

Study Team Members in attendance were:

- P. Shaver - MTC, Planning & Design
- B. Ogden - MTC, Planning & Design
- I. Williams - M.M. Dillon Limited

1. GENERAL

The display boards to be used at the upcoming first series of Public Information Centres were presented to the Committee. The displays included:

- 1:5,000 mosaic showing the alternative alignments under review, together with the abandoned alternatives
- overall study area indicating the entire Hamilton to Nanticoke corridor, and the Hamilton to Caledonia Study Area showing the rejected east and central corridors
- text displays illustrating the projects objectives, and a comparison of the various alternative corridors in terms of those objectives.

The meeting was amicable, with no significant objections voiced to any component of the project.

QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council and the answers.

- Question: Are we aware of the cemetery on Book Road in the vicinity of Alignments A and B?
- Answer: Records have not indicated the presence of this cemetery. However, it will be investigated.
- Question: Have we yet completed any environmental studies?
- Answer: To date, we have met with all the provincial agencies including MNR, MOE, Conservation Authorities, etc, and in addition, have carried out field investigations of identified natural environmental areas.
- Question: What is the timing of construction?
- Answer: No construction is programmed yet, and it is expected to be comparatively long term. However, this study will identify a recommended construction staging sequence.
- Question: What would be the minimum time frame for construction?
- Answer: With the EA process, preliminary design, final design and property acquisition, the process would take about five years in any event. However, this should not be construed that construction will be under way in five years.
- Question: The local architectural conservation advisory committee is very concerned about buildings of historical significance in the area. Are these being considered in the study?
- Answer: An in-depth study of these issues is part of the project. Sites identified to date are already mapped on the display plans.

Question: One Councillor made the statement that he understands human remains are also buried in the pet cemetery on Book Road.

Answer: This issue has been brought up before, and is in the process of being checked.

MEMO TO: File
CC: P. Shaver, B. Ogden, F. Leech, J. Tennyson
J. Horton
FROM: I. Williams
SUBJECT: Highway 6 (New) Hamilton to Caledonia
Route Location and Preliminary Design Study
FILE NO: 9576-01
DATE: 20 June 1985

PRESENTATION TO THE HALDIMAND/NORFOLK ENGINEERING COMMITTEE

The first presentation of this project to the Haldimand/Norfolk Engineering Committee was held on the evening of 18 June 1985.

Study Team Members in attendance were:

- P. Shaver - MTC, Planning & Design
- B. Ogden - MTC, Planning & Design
- I. Williams - M.M. Dillon Limited

1. GENERAL

The display boards to be used at the upcoming first series of Public Information Centres were presented to the Committee. The displays included:

- 1:5,000 mosaic showing the alternative alignments under review, together with the abandoned alternatives
- overall study area indicating the entire Hamilton to Nanticoke corridor, and the Hamilton to Caledonia Study Area showing the rejected east and central corridors
- text displays illustrating the projects objectives, and a comparison of the various alternative corridors in terms of those objectives.

The meeting was extremely amicable, with no significant objections voiced to any component of the project.

2. QUESTIONS AND ANSWERS

Question: Why is no public information centre being held in the Town of Haldimand?

Answer: The only appropriate location in the study area in Haldimand would have been the school on Unity Road, which would have been in use at the time the information centres were scheduled. However, this point has been brought up before, and at the next series of information centres consideration will be given to holding a centre in Haldimand.

Question: What will happen to existing Highway 6 after the construction of new Highway 6?

Answer: This issue has, as yet, not been addressed. However, when Highway 6 (New) is completed as a freeway facility, it is likely that existing Highway 6 will be transferred out of the Provincial system.

Question: What will happen to local roads that are not under Regional jurisdiction, if an interchange is proposed (e.g. Greens Road)?

Answer: The study has not addressed this issue as yet.

Question: Will the design standards generally be similar to the Caledonia By-pass?

Answer: Yes. The Caledonia By-pass is designed to allow for upgrading to a full freeway in the future.

Question: Why does Alternative 2 remove five houses at Unity Road, whereas the others remove fewer?

Answer: The basic right-of-way for the facility is 80 meters. However, in view of grading in the vicinity of Unity Road, 100 meters has been assumed. This could remove as many as five houses with this alternative. In this phase of the study, the number of houses removed is estimated on the high side rather than the low side. During subsequent preliminary design fewer houses may in fact be removed.

Question: What is the construction cost of the various alternatives?

Answer: Approximately \$30 to \$35 million is being carried for construction cost for a full freeway facility (excluding property). No significant differences in construction costs are anticipated between the alternatives.

Question: Which alternative (1 or 2) has the most impact on the water fowl area in the vicinity of Whitechurch Road?

Answer: Approximately equal. We understand that neither alternative impacts on the most sensitive part of this area.

Question: What is the timing of construction?

Answer: At present, no construction is on the Ministry's Five Year Program, and the project is anticipated to be comparatively longer term. This study will recommend construction staging.

Question: How are the people on Unity Road responding?

Answer: The public information centres are next week. Consequently, we will have a better idea then. However, certain individuals have phoned to determine the location of alternatives.

Question: One board identifies a connection between New Highway 6 and Existing Highway 6 in the vicinity of Whitechurch Road. What is this for?

Answer: Traffic analysis suggests a desire for traffic from the south to access existing Highway 6 to enter the City of Hamilton. This desire has to be acknowledged, and may result in a connection between New Highway 6 and Existing Highway 6 in the vicinity of Whitechurch Road. The connection may however be accommodated by an interchange at Whitechurch Road.

MEMO TO: File

CC: P. Shaver, B. Ogden, F. Leech, J. Tennyson
J. Horton

FROM: I. Williams

SUBJECT: Highway 6 (New) Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE NO: 9576-01

DATE: 20 June 1985

PRESENTATION TO THE TOWN OF GLANBROOK COUNCIL

The first presentation of this project to the Glanbrook Council was held on the evening of 17 June 1985.

Study Team Members in attendance were:

- P. Shaver - MTC, Planning & Design
- B. Ogden - MTC, Planning & Design
- I. Williams - M.M. Dillon Limited

1. GENERAL

The display boards to be used at the upcoming first series of Public Information Centres were arranged in the hall adjacent to the Council Chambers prior to the meeting. Council asked the Study Team various questions during this period. The displays included:

- 1:5,000 mosaic showing the alternative alignments under review, together with the abandoned alternatives
- overall study area indicating the entire Hamilton to Nanticoke corridor, showing the rejected east and central corridor alternatives for Highway 6 (New)
- text displays illustrating the projects objectives, and a comparison of the various alternative corridors in terms of those objectives.

The meeting was extremely amicable, with no significant objections voiced to any component of the project.

Council did not request a formal presentation of the project but preferred to ask specific questions.

2. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council and the answers.

Question: Why not use existing Highway 6?

Answer: In the longer term, Highway 6 (New) will be a freeway facility. As such facilities are fully controlled access, it would be necessary, if the existing road were adopted, to purchase all frontage properties. This would be infeasible.

In addition, existing Highway 6 approximates the abandoned central corridor, which from a transportation service viewpoint, is not as acceptable as the west corridor.

Question: Why were the more westerly two alignments abandoned?

The questioner noted that in the 1976 study an alignment to the west was the preferred alignment. The questioner observed an alignment in this area would reduce severance of the Town of Glanbrook.

Answer: A traffic analysis has identified a strong desire for traffic travelling northbound to access existing Highway 6, and thence parts of Hamilton. Consequently, an alignment too far removed from existing Highway 6 would not meet the objective of increasing use of the Caledonia By-pass, as drivers would elect to remain on existing and old Highway 6. It was agreed that the results of the 1976 study would however be reviewed in this regard.

Question: How would the Airport be served from the south?

The questioner noted that access from the south to the Airport is important in terms of regional development.

Answer: Intersections or interchanges would be protected at Book Road and Butter Road, and possibly, Glancaster Road.

Question: Service to the Airport is important, therefore an alignment close to the Airport should be selected.

Answer: This will be a factor in evaluating alternatives.

Question: In order to best serve the Airport, why not tie Highway 6 (New) into the proposed Butter Road realignment?

Answer: This may well be considered as an initial construction stage. However, in the longer term, Highway 6 (New) will be extended to the south.

Question: Why does one of the display boards show a direct connection from Highway 6 (New) to existing Highway 6 in the vicinity of Whitechurch Road?

Answer: This relates to the previous point regarding a strong desire for traffic from the south to access existing Highway 6 into Hamilton. This connection may in fact be provided via Whitechurch Road and an interchange at Highway 6 (New).

Question: Will Council be informed of the comments made by the public at the information centres?

Answer: A full report on the information centres will be prepared and circulated to Council for their information.

In addition to the above, Councillors asked various questions regarding specific properties.

MEMO TO: File

CC: P. Shaver - MTC, Planning & Design
B. Ogden - MTC, Planning & Design
P. Leech - MTC, Environmental
J. Horton - M.M. Dillon Limited
J. Tennyson - M.M. Dillon Limited

FROM: I. Williams

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location & Preliminary Design Study

FILE NO: 9576-01

DATE: 14 June 1985

PRESENTATION TO THE TOWN OF HALDIMAND COUNCIL

The first presentation of this project to the Haldimand Town Council was held on the evening of 10 June 1985.

Study Team members in attendance were:

- P. Shaver - MTC Planning & Design
- M. Chan - MTC Planning & Design
- J. Horton - M.M. Dillon Limited
- I. Williams - M.M. Dillon Limited

1. GENERAL

The display boards to be used at the up-coming first series of public information centres were arranged in the vestibule to the Council Chambers prior to the meeting. Councillors asked the Study Team members various questions. The displays included:

- 1:5,000 mosaic showing the alternatives under review together with the abandoned alternatives
- overall study area indicating the entire Hamilton to Nanticoke corridor and the Hamilton to Caledonia study area showing the rejected east and central corridors
- text displays illustrating the project's objectives and a comparison of the various alternative corridors in terms of those objectives

The meeting was extremely amicable with apparently much support for the project.

2. PRESENTATION

Mr. P. Shaver gave an introductory presentation to members of Council summarizing the history of the Highway 6 (New) study leading up to the current project.

Following this presentation, members of Council were again invited to view the displays where the study team would answer further questions.

3. QUESTIONS AND ANSWERS

The following are the questions asked by Council, and the answers given.

Question: Will Highway 6 (New) be a four-lane divided highway?

Answer: Planning is proceeding for a full freeway facility, however, it is likely that the road will be stage constructed with an arterial phase first.

Question: South of Caledonia, Highway 6 seems to have adequate capacity. What is the timing of construction for new Highway 6 in this area?

Answer: South of Caledonia there is no change in the status of the Highway. The originally planned alignment is still applicable although it has not been designated. This study is for the section of Highway 6 (New) north of Caledonia only.

Question: Are we still considering the three basic corridors north of Caledonia?

Answer: These three corridors were identified in the 1976 study. Our study has already eliminated the central and easterly corridors, as they do not comply as well as the west corridor with the stated objectives of the project.

Question: Where will be brochure be distributed?

Answer: Throughout the entire study area to all potentially affected people.

Question: What is the timing of construction of this section of Highway 6 (New)?

Answer: Construction is longer term, and is not on the Ministry's construction program at present. Part of the study will be to address staging.

Question: Will the traffic operational problems at the south end of the Caledonia by-pass be remedied?

Answer: A separate study of this issue is about to start, and the problems will be rectified.

Question: Will Whitechurch Road need reconstruction in view of the interchange in the area?

Answer: Some reconstruction may be necessary, however, this will predominantly be the responsibility of the Region of Hamilton-Wentworth.

Question: Why not use an existing road, e.g. Glancaster Road, instead of a new route?

Answer: As a freeway is being planned in the longer term it is not feasible to use an existing roadway with private access.

Question: What will happen to existing Highway 6 when Highway 6 (New) is constructed?

Answer: It is likely that at that time the existing Highway will be transferred out of the Provincial Highway System.

MEMO TO: File

CC: P. Shaver, B. Ogden, F. Leech, J. Nuttall,
M. Cohen, J. Tennyson, J. Horton

FROM: I. Williams

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE NO: 9576-01/13

DATE: 15 July 1985

Public Comments:

1. Glanford Community Hall - June 24, 1985
2. Marritt Hall, Ancaster - June 25, 1985

PUBLIC INFORMATION CENTRE - GLANFORD COMMUNITY CENTRE, MOUNT HOPE

The first series of Public Information Centres for this project were held on 24 and 25 June 1985.

This memorandum details the comments made by members of the public at the first information centre on 24 June 1985 at the Glanford Community Hall in Mount Hope, Ontario.

Attendance at the Centre was good, with the estimated total number of people attending about 150. This is based on the sign-in sheet provided, and the Study Team's opinions of the numbers who may not have signed in.

The general centre organization, the display boards used and the way in which the centre was advertised and announced is discussed in a separate report on the first series of public information centres for this project.

The project obviously generated a great deal of interest in the community, with the Study Team being fully occupied in answering questions and responding to concerns. Study Team members in attendance at all times were:

- Mr. P. Shaver - MTC
- Mr. B. Ogden - MTC
- Mr. D. Segodnia - MTC
- Mr. F. Leech - MTC
- Ms. J. Tennyson - M.M. Dillon Limited
- Ms. D. Hinde - M.M. Dillon Limited
- Mr. I. Williams - M.M. Dillon Limited

Appendix D

In addition, Mr. M. Cohen, from Transport Canada was in attendance throughout to answer any questions relating to the Mount Hope Airport Expansion Program.

Comment sheets were made available for members of the public to complete, in addition, Study Team members completed comment sheets during discussions with members of the public. A special questionnaire was made available to farmers in the area. This questionnaire was directed at establishing the specific impacts on farming operations of the alternatives Highway 6 (New) alignments under review.

The following details are comments made by members of the public during the information centre.

| Individual | Comments |
|--|---|
| R. Douglas Group G, Box 39 4115 Glanaster Road R.R. # 3 Mount Hope, Ontario LOR 1W0 | Objected to the expanded airport and now a new proposed highway. Suggested waiting to see if the airport is used, prior to embarking on a new highway facility. |
| Mr. & Mrs. A. Simmons R.R. # 2 Caledonia, Ontario | Route 2 would give off too much carbon monoxide for the school children at Seneca Unity. Route (4)? would be better for Unity Road residents, and would only provide one curve instead of two. Suggested enlarging existing Highway 6. |
| Stewart Jones R.R. # 2 Caledonia, Ontario | Requested that a public information centre be held in the hamlet of Unity, rather than just in Mount Hope and Ancaster. |
| | Noted that the Regional Municipality recognized the Unity/Mines Road area as a "hamlet". Questioned MTC guidelines or regulations regarding routing a highway through vs around a hamlet. Thinks that Hamlet of Unity is being ignored. There are 350 people directly affected by the proposal. Asked what percentage of present Highway 6 traffic will be diverted to the new highway. |
| | Asked what type of noise attenuation would be provided. |

| Individual | Comments |
|---|---|
| Stewart Jones R.R. # 2 Caledonia, Ontario | Wanted to know why Highway 6 (New) is necessary to the survival of the area to the south of Caledonia. Homes will be lost; farms ruined - for what? More information as to why the project is needed is requested. |
| H. Arnold R.R. # 2 Mines Road Caledonia, Ontario | He feels that since most of the people in the area travel to Hamilton, and require access to Highway 6, alternatives 1 or 2 would be preferable. Alternatives 3 and 4 would create hardship both for the farmers and local residents. |
| Mr. & Mrs. H. Bothwright R.R. # 2 Caledonia, Ontario | Requested to be kept informed of the progress of the study. |
| Mr. Donald Dawe 9625 Chippewa Road West Glanbrook, Ontario | Cannot see the need for the road, either now, or in the future 20 years. To destroy farm land and houses for something that may be needed is foolish. The project will destroy a way of life, and the environment. |
| Mr. & Mrs. N. Butt 3266 Homestead Drive Mount Hope, Ontario | Concerned with residential property impacts and proximity. |
| Mr. & Mrs. Murray R.R. # 2 Mines Road Caledonia, Ontario | Concerned with property impacts and farm severance. Suggested no road closures. Requested to be kept informed of process. |
| Mr. & Mrs. Quinn 9110 Chippewa Road Mount Hope, Ontario | Alternative 4 creates minimum property impacts and proximity. |

Individual

Comments

Mr. Duwehan
9065 Chippewa Road
Glanbrook, Ontario

With Alternative 3 or 4, prefer Chippewa Road be closed. With Alternatives 1 or 2, road closing or structure will be acceptable.

Mr. E. Blagden
R.R. # 2
Caledonia, Ontario

Alternative 4 is too close to their house, and they would not be able to sell it.

Anonymous Comment Sheet

The road should be built immediately as a freeway, and not as an initial 2-lane road. The Caledonia By-pass is not designed for high enough speeds. Questioned need and demand for the highway. There is no traffic on existing Highway 6.

Mr. Courtt
R.R. # 2
Caledonia, Ontario

Alternatives 1 and 2 have no effect on their property access; Alternatives 3 and 4 would have effects on their property access.

Mr. M. McQueen
R.R. # 3
Mount Hope, Ontario
LOR 1W0

Chippewa Road should not be closed regardless of the alternative selected. Concerned about devaluation of their property if a highway is built. Prefer Alternative 4.

Mr. S.W. Tasker
65 Strathearn
Mount Hope, Ontario
LOR 1W0

No objections to either route. Action is needed now to boost the economy of the airport area and Lake Erie industry.

Alternatives A and 1 are his preferences.

Mr. C. Houwer
9550 Chippewa Road
Mount Hope, Ontario

Objected to Alternative 3 as it would spoil his house and property, and would damage too much agricultural land. Alternatives 1 or 2 are more feasible for Highway 6 traffic.

Mrs. K. Harrison
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Requested that a mosaic with the alignments be sent to her. She will send it back with comments.

Individual

Comments

Mr. & Mrs. J. Lane
R.R. # 2
Mines Road
Caledonia, Ontario

Concerned with overall property values. Noted that Unity Road is a good residential area. Suggested that alignments farther to the west were the better ones (e.g. abandoned alternatives). Unity Road should not be cut in half. Concerned with how difficult it will be to sell a house close to a freeway. Also concerned with impacts on the school if an alignment is close to it.

Mrs. F. Whaley
9519 Chippewa Road
Mount Hope, Ontario

Access along Chippewa Road is very important to provide for access to Highway 403.

Ms. J. Whaley
9389 Chippewa Road
Mount Hope, Ontario

Require access from Highway 403 to Chippewa Road.

Mr. & Mrs. H. Ernst
998 Upper Wentworth
Hamilton, Ontario
L9A 4V8

Feel Alternative 4 is the best, as it will be the least costly, and would not involve so many residences. Noise impact is a major concern. If the road is built, it should have at least 4 lanes to serve the needs. However, impact on adjacent residents is important. Proper planning is required for the affected areas. A connection to the proposed Red Hill Creek Expressway should be considered.

Anonymous Comment Sheet

Alternative 1 seems like the best route if a connection is made to existing Highway 6.

Mr. & Mrs. A. Lanari
R.R. # 2
Unity Road
Caledonia, Ontario

Very concerned regarding land severance impact on farm lands and impact on residences and existing communities. Noted the population and the traffic volumes are not high enough to justify the project.

Stay away from Unity Road. Have we considered using Indian Reservation Land?

| Individual | Comments | Individual | Comments |
|---|--|---|---|
| Mr. & Mrs. G. Dixon R.R. # 2 Caledonia, Ontario | Very concerned that the highway would devalue adjacent properties. Cannot see the justification for the route. Alternatives 1 and 2 would cut through and destroy family farms and their livelihood. | Mr. & Mrs. D. Kauk R.R. # 2 Caledonia, Ontario | Alternatives 1, 2 and 3 impact on the hamlet of Unity Road and are too close to existing Highway 6. Alternative 4 would have less impact on residential properties. Alternative 1 would divide the community and devalue property. We moved to the country to avoid highway traffic. Very concerned about property being devalued. |
| Mr. & Mrs. B. Nusko R.R. # 3 Mount Hope, Ontario LOR 1W0 | Neither of the alignments shown as abandoned should be considered. Preferred Alternatives 1, 2 or 3, but not 4. | | Will fight for route 4. Does not want Unity Road split as a community. Prefers new highway away from Highway 6 to provide easy access to traffic going into the airport and into Hamilton |
| Mr. C. Mahy 4425 Glanaster Road LOR 1W0 | Prefer Alternatives 1, 2 or 3, but not 4. The abandoned routes should not be reconsidered. | | |
| Mrs. H. Sheppard Box 27 R.R. # 2 Mount Hope, Ontario LOR 1W0 | Strongly objected to the destruction of farm land and settlements just for a highway. Noted that the airport is a white elephant. | Mr. W. Hamilton 86 Edgemont Street E Hamilton, Ontario L8K 2H5 | The building designated "Wintario Shed" where Alternative 4 crosses Whitechurch Road belongs to the Road Runners Car Club. They own the building and lease the land. The club renovates automobiles. Replacement value of the building would be in excess of \$100,000. Were concerned that an overpass on Whitechurch Road would lead to the building being eliminated. Requested to be kept informed as a representative of the car club. |
| Mr. G. Sheppard Box 27 R.R. # 2 Mount Hope, Ontario LOR 1W0 | Each alternative is appalling. Alternative 4 is the least of a bad mess, as wild life and woodlots would not be destroyed. Mount Hope Airport is a "mini Mirabelle". | | |
| Mr. A. Varga 9738 Twenty Road Mount Hope, Ontario LOR 1W0 | Go ahead and do something. | | |
| Ms. V. Plant 3870 Highway 6 Glanbrook, Ontario Mount Hope, Ontario | Alternative 1 is too close to existing Highway 6 and no real advantage. Suggested Alternatives A and 4 or A and 3. Noted that with these alternatives, the natural waterfowl area would be least affected. | Mr. Farnham 9360 Chippewa Road Mount Hope, Ontario | Chippewa Road is a well used road. If it was closed access would be a problem, and it would then be necessary to upgrade Glanaster Road. Alternative 4 affects no houses and is the most logical. Prefers Alternatives A and 4, as fewer people are affected. Doesn't like any Alternatives through the Unity Road settlement. |

| Individual | Comments |
|---|--|
| Mr. A. Torkelson R.R. # 2 Caledonia, Ontario | Feel the separation of Unity Road is ridiculous. Only Alternative 4 is worth considering, with a very distant second choice being Alternative 1. If 2 or 3 were selected, would require ample time to sell the house with a guarantee of the value by the Government. Requested a formal reply to his comments. |
| Mr. & Mrs. H. Witt Group G, Box 17 R.R. # 3 4283 Glancaster Road Mount Hope, Ontario LOR 1W0 | Cannot see spending \$30 to 35 million and disrupting all the families and farm lands for a road that is not apparently needed with existing Highway 6 being in good condition. If the project must go ahead, would prefer Alternatives 1 or 2 as these would least affect him personally. Felt the expenditure is so high that there must be a hidden reason for the project and asked what it was. Agreed with the comments of Mr. H. Witt noted above. |
| Mr. F. Geres 9620 Haldibrook Caledonia, Ontario LOA 1A0 | Does not like Alternative 4 (noise factor). Prefers 1 or 2. |
| Mr. H. Whaley Airport Road, R.R. # 2 Mount Hope, Ontario LOR 1W0 | We should look at a direct access from New Highway 6 from the south to the airport. |
| Mr. J. Valvasone Whitechurch Road, R.R. # 2 Mount Hope, Ontario | Concerned re: proximity of Alternative 1. Will be interested to see the details later. |

MEMO TO: File

CC: P. Shaver, B. Ogden, F. Leech, D. Segodnia, J. Nuttall, M. Cohen, J. Tennyson, J. Horton

FROM: I. Williams

SUBJECT: Highway 6 (New) - Hamilton to Caledonia Route Location and Predesign Study

FILE NO: 9576-01/13

DATE: 15 July 1985

FIRST SERIES OF PUBLIC INFORMATION CENTRES - MERRITT HALL, ANCASTER

The first series of Public Information Centres for this project were held on 24 and 25 June 1985.

This memorandum details the comments made by members of the public at the information centre on 25 June 1985 at the Merritt Hall in Ancaster, Ontario.

Attendance at the Centre was good, with the estimated total number of people attending about 150. This is based on the sign-in sheet provided, and the Study Team's opinions of the numbers who may not have signed in.

The general centre organization, the display boards used and the way in which the centre was advertised and announced is discussed in a separate report on the first series of public information centres for this project.

The project obviously generated a great deal of interest in the community, with the Study Team being fully occupied in answering questions and responding to concerns. Study Team members in attendance at all times were:

- Mr. P. Shaver - MTC
- Mr. B. Ogden - MTC
- Mr. D. Segodnia - MTC
- Mr. F. Leech - MTC
- Mr. J. Nuttall - MTC
- Ms. J. Tennyson - M.M. Dillon Limited
- Mr. I. Williams - M.M. Dillon Limited

In addition, Mr. M. Cohen, from Transport Canada was in attendance throughout to answer any questions relating to the Mount Hope Airport Expansion Program.

Comment sheets were made available for members of the public to complete, in addition, Study Team members completed comment sheets during discussions with members of the public. A special questionnaire was made available to farmers in the area. This questionnaire was directed at establishing the specific impacts on farming operations of the alternatives Highway 6 (New) alignments under review.

The following details are comments made by members of the public during the information centre.

| Individual | Comments |
|--|--|
| Mr. K. C. Reed 328 Highway 53 East Ancaster, Ontario | Mr. Reed's house would be eliminated on Highway 53 by all 4 alternatives. Mr. Reed is retired and would like something to be done now with respect to purchasing his house. He feels that with the project it would be impossible for him to sell it himself. |
| Mr. F. Walker Slack Transport Caledonia, Ontario | Fully agreed with an interchange at Greens Road to service the industrial area in Caledonia. |
| Mrs. L. Rayfield 1370 Glanaster Road R.R. # 2 Mount Hope, Ontario | Would like to see traffic signals or overpasses immediately at the intersections where Glanaster Road and Butter Road are affected. The reason is safety of children using school buses crossing the intersections. Would object to any road closures in the area due to Fire Department truck routes and emergency vehicle routes. Hope that the project will reduce traffic volumes on local roads. Roads should also remain open during construction. |

| Individual | Comments |
|---|--|
| Mr. C.P. Connor 287 Graham Avenue S, R.R. # 2 Caledonia, Ontario L8A 2M7 | Having recently purchased property on is fully in support of the project as it may increase the value of his property. |
| B. McFarland 346 Highway 53 Ancaster, Ontario L9G 3K9 | As the plan has been around since 1967 it is time that the property that has been affected is purchased. |
| Mr. Andrew Cranbury 153 Hatton Drive Ancaster, Ontario | Feels the the 6 (new)/Highway 403 interchange is too close to the Fiddlers Green/Highway 403 interchange, and will result in accidents on Highway 403. |
| Mr. D. Rowntree (Bruce R. Smith Limited Transport) R.R. # 2 Simcoe, Ontario | prefer routes 1 or 2 and A. Alternatives 1 or 2 provide best access back to existing Highway 6 and into Hamilton. This route would provide best flexibility for travel to downtown Hamilton or Toronto and beyond. |
| J. Wood Cronkwright Transport 405 Queenway West Simcoe, Ontario | Strongly recommended Alignment 1 or 2 and A, as they provide better access to downtown Hamilton. |
| Mr. W. Smith 118 Jackson East Hamilton, Ontario L8N 1L3 | Mr. Smith owns property on Whitechurch Road which would be affected by Route # 4. Some of the property is rented to the Road Runners Car Club. Mr. Smith was about to sell the property to the Road Runners Car Club, however, the car club are now not sure whether to proceed in view of the Highway 6 (New) project. He would like an answer quickly as he would like to complete the sale. |
| John Gordon R.R. # 2 Caledonia, Ontario | Alternative 4 is not feasible due to the farms that would be affected. Feels that in view of the very slow development in Nanticoke the road is not justified. Very concerned about a house being left close to the road but not bought out. |

| Individual | Comments | Individual | Comments |
|--|---|--|--|
| Mr. & Mrs. D. Ambridge 277 Alma Lane Ancaster, Ontario L9G 2T6 | Why not use the new Fiddlers Green Road interchange? No alternatives seem satisfactory. A better route would be an east-west thruway to hook up east of Highway 6 from Highway 20. Why not use the intersection of Golf Links and Highway 403? | Mr. H.H. Winegarden 120 Book Road East Ancaster, Ontario L9G 3L1 | Alternatives A and B will remove at least one historical house, built in 1814. Plan A or B would result in high noise levels at his property on Book Road. Airport noise levels also create a problem. |
| Mr. & Mrs. H. Koziol 298 Harmony Road Ancaster, Ontario L9G 2T2 | Concerned about noise and strongly recommended provision of a noise barrier between their property and a new highway. | Mr. & Mrs. H. Granholm 1345 Fiddlers Green Road Ancaster, Ontario L9G 3L1 | Prefer Alternative A in view of the following: most direct route, lowest noise levels on Fiddlers Green Road, least chance of affecting our water supply (well water). |
| Layfield 1296 Trinity Road, R.R. # 2 Ancaster, Ontario | Farm on Butter Road operated by their daughter is in the middle of the proposed interchange (referenced as Smith). Questioned about future airport expansion plans as the new runway still can't handle inter-continental aircraft. | Mr. T. McCartney 150 Hatton Drive Ancaster, Ontario L9G 2H6 | Feels that if it is possible to justify Highway 6 (New) then there will be serious traffic problems on Highway 403 which would require widening in the King/Main area. Very concerned about visual and noise effects resulting from the new Highway 6/Highway 403 interchange. Design of interchange should be such to minimize noise levels. Excavated material should be placed north of Highway 403 to create a noise barrier, with additional noise barriers being considered. |
| Mr. & Mrs. G.R. Killman R.R. # 2 9627 Whitechurch Road Mount Hope, Ontario LOR 1W0 | Alternative 3 eliminates a bush on his father's farm. The bush contains much wild life. The proximity of the road to his house (with Alternative 3) would require that he move. He would therefore not be able to assist his father in the dairy operation which would significantly impact the farm. | Mr. P. Smidt 391 Cottingham Crescent Ancaster, Ontario | Recommends Route C. |
| Mr. L. Dorr 345 Lima Court Ancaster, Ontario L9G 3M8 | Very concerned with commercial traffic accelerating and decelerating on the new facility. | Mr. D. Tidey P.O. Box 6027, Station F Glanbrook, Ontario | Suggested protecting for a second future exit from Highway 403 about 2 miles further west to accommodate an expressway from the Hamilton Airport area, north through Coketown, Peters Corners, etc., north to Highway 401. This would be the shortest route. |
| Mr. R. Ward 493 Butter Road East Ancaster, Ontario | Felt that Alternative A would be the most direct and best route. There should be closer liaison with the Regional Municipality regarding the airport road extension in order to minimize the total number of roads required. Join the roads together to make the best use of a limited number of roads. | Mr. A. Friesen 395 Cottingham Crescent Ancaster, Ontario L9G 3V5 | Favours Route A and feels the project should proceed earlier than proposed. |

| Individual | Comments | Individual | Comments |
|---|---|---|---|
| Mr. W. Petrie 282 Book Road East Ancaster, Ontario | Opposed to the proposals; Alternative 1 eliminates his house, and Alternatives 2 and 3 will take away the tranquility he sought in the area. Think of Pickering and Mirabelle before destroying this beautiful area. | Several Owners | Recommended strongly provision of ramps at Highway 53 in order to relieve local roads, particularly Fiddlers Green Road. |
| Mr. J-P. Day 305 Harmony Road Ancaster, Ontario | Very concerned with noise levels in the Highway 6 (New)/Highway 403 interchange area. Consider noise barriers. | Ms. J. Layfield 157 Butter Road East Ancaster, Ontario L9G 3L1 | Alternatives B and C are very close to the house and barns. Considering developing additional pasture in conjunction with the red meat plant. Plan and delays in selecting a route may hamper eligibility for the program. Sheep on the farm are sensitive to high noise levels. Hence, a route close to his farm would decrease productivity of the flock. |
| Mr. & Mrs. B. Willemsen R.R. # 2 Caledonia, Ontario NOA 1A0 | Alternative 4 would have such serious effect on his farm that it should be purchased in its entirety. Prefer Route # 1. | C.D. Smith R.R. # 2, 1224 Smith Road Ancaster, Ontario L9G 3L1 | Construction could significantly disrupt major tile drainage done on fields in the Fall of 1983. Construction could cause problems moving farm machinery around. Alternative A seems to cause least disruption of farm community. Some consideration should be given to whether land is owned by a speculator, part-time farmer of full-time farmer. |
| Mr. & Mrs. S. Breitigam 314 Harmony Road Ancaster, Ontario L9G 2T2 | Very concerned with loss of quiet and privacy, and rural atmosphere. In view of this, strongly objects to the project. If project proceeds would expect monetary compensation and erection of noise barriers. | Ms. Shirley Stroud 263 Hwy. 53 East Ancaster, Ontario | Wants information on where new highway is going. Wants to know if there is any use in building a house on her property in the next two years. |
| Mr. G.E. Ruhn R.R. # 2 Ancaster, Ontario | The most direct and preferred route is Alternative 4, and A, with interchanges at Book and Butter Road. | Mr. Sam J. Burd 309 Harmony Road Ancaster, Ontario L9G 2T3 | Built home in 1968 and had no knowledge of a cut-off 200 meters west of his property. This fact, added to the noise from Highway 403, should make it very difficult to sell in the future. |
| Mr. D. Broom Box 31, R.R. # 3 Mount Hope, Ontario | Satisfied with alternative routes. Would not like to see the abandoned routes being considered. No roads should be closed. | | |
| Mr. D. Collins 588 Book Road West Ancaster, Ontario L9G 3L1 | Cautioned that if the Pet Cemetery is relocated there will be 600 - 700 people very upset with this decision. (It was agreed that a specific meeting will be held with Mr. Collins, who is the owner of the Pet Cemetery, on this issue.) | | |
| Mr. J. Cranston 189 Carluke Road Ancaster, Ontario L9G 3K9 | Strongly recommended using existing airport road as an alternative. Also strongly recommended provision of ramps at Highway 53 to relieve local roads, particularly Fiddlers Green Road. Very concerned about project. | | |

| Individual | Comments | Individual | Comments |
|--|---|--|--|
| Mr. Gerald Hastie 297 Harmony Road Ancaster, Ontario L9G 2T3 | Unable to attend the meeting in Ancaster, but wanted to mail in comment. They live off Southcote Road, and so will be near the new Highway 6. Would like a noise barrier to help control noise problem. | Mr. and Mrs. Howley Mines Road, R.R. # 2 Caledonia, Ontario | Own about 150 acres and a century farm. Needs the entire land for farming. Do not close any roads. Very concerned with impacts on farm operation. |
| Mr. & Mrs. J. Karschti 302 Harmony Road Ancaster, Ontario | Concerned about increased traffic and noise. Some types of noise barrier should be considered. | | A large parcel of his farm would be severed by Alternative 3. Leave local roads open. Prefer Alternatives 1 or 2. |
| Mr. J.R. Hoover R.R. # 2, Mines Road Caledonia, Ontario | Opposed to crossing of Unity Road, i.e. Alignments 2 & 3. Opposes Alignment 4 due to farm severances. | Mr. McTear R.R. # 1 Caledonia, Ontario LOA 1A0 | Leave local roads open. The road is needed to unload existing Highway 6. Noise from the existing Highway is a problem. Alternative 2 would have little effect. Alternative 1 would create severance. |
| Mr. G. Major R.R. # 1, 9445 Twenty Road Mount Hope, Ontario L0R 1W0 | Questioned need for Highway 6 (New) and questioned determination of Environmentally Significant Areas. | Mrs. Travale Box 33, Group 6 R.R. # 3 Mount Hope, Ontario | Prefer Alternatives 3 or 4 that don't affect the waterfowl area and the Welland River. Bridges should be provided, not road closures. Noted snow blowing problems on existing Highway 6 in the vicinity of the golf course. |
| | | Robert Hall 4207 Glancaster Road Mount Hope, Ontario | Alternative 1 should be considered as this appears to have the least effect on people in the community. Chippewa Road should be kept open and not closed at the new highway. |
| | | Mrs. M. McKinnon Box 81 Mount Hope, Ontario L0R 1W0 | Favour a route following Alternative A and 1, which seem to maximize airport access and minimize impact on the surrounding area homes. Alternative also provides a smooth transition for traffic into the Caledonia By-pass. |
| | | Mr. & Mrs. W. Bates R.R. # 2 Caledonia, Ontario | Alternative 1 could cut off access to the west end of their farm. Alternative 2 would take their home, leaving about 88 acres and no residence. A road should not be built close to a residence without buying it out. |

| Individual | Comments |
|--|---|
| Mr. H. Bick 188 Aldercrest Avenue Hamilton, Ontario L9B 1L6 | The route is not good for people wishing to go from Hamilton to Nanticoke. Why not build it on the east side? Concerned about farm severances and impacts. |
| Mr. G. Johnson 4405 Glancaster Road Mount Hope, Ontario | Wants access back to the highway. Do not close any roads. |
| Mr. & Mrs. Whitnell 4201 Glancaster Road Mount Hope, Ontario | Closure of Glancaster Road due to airport project is very inconvenient. |
| Mrs. M. Donovan 211 Butter Road R.R. # 2 Ancaster, Ontario L9C 3L1 | Requested a large scale map of Butter Road area. |
| Mr. H. Kruis R.R. # 2 Caledonia, Ontario | The Howley farm is a viable dairy operation, and an old homestead. Would like more detailed information if Alternative 4 were chosen. |
| Mr. J. Lezak R.R. # 2 Caledonia, Ontario LOA 1A0 | Questioned why the route would have to be built on his property. Asked for more detailed information regarding the effects on his land. Planted woodlot should be shown on the map. |
| Various Residences on Butter Road | Butter Road should be kept open. |
| Mrs. E. Fuller Unity Road, R.R. # 2 Caledonia, Ontario | One of the westerly abandoned routes should be selected. Access from one of these alignments to existing Highway 6 would still be acceptable. |
| Mr. R. Douglas 4115 Glancaster Road R.R. # 3 Mount Hope, Ontario | Alternative 1 or 2 would be preferred. Keep Chippewa Road open. |
| Mr. Scott Chippewa Road Glanbrook, Ontario | Does not like Alternative 4 as it would ruin his farm operation. |

| Individual | Comments |
|--|--|
| Ms. C. Lawry R.R. # 2 Caledonia, Ontario LOA 1A0 | Concerned re: traffic noise. Moved away from Highway 6 for this reason. Cannot see the need or justification for the cost. The Caledonia By-pass is not used. She would prefer an alignment further west. |
| Mrs. Killman R.R. # 2 Whitechurch Road Mount Hope, Ontario LOR 1W0 | Her house is not plotted on the display maps. |
| Mr. & Mrs. M. Sanders R.R. # 2 Mines Road Caledonia, Ontario | Concerned about proximity to their house and access if any roads were closed. Requested more details later. |
| Mr. A.F. Dixon R.R. # 2 Caledonia, Ontario | Preferred Alternative 4 as fewer farms affected. Alternatives 1 and 2 would change the total character of the area. Concerned about cutting off Leaming Road. |
| Mr. G.R. Cowie R.R. # 2 Caledonia, Ontario | No major problems with Alternatives shown. |
| Mr. & Mrs. T. Hyslop R.R. # 2 Caledonia, Ontario LOA 1A0 | Farms land (no house) on south side of Townline Road. Would be affected by Alternative 2. Routes go through a lot of residential properties, but could go west and save a lot. Not fair to residents on Unity Road by cutting it in two. Concerned about road closures; requires Townline Road be kept open. Uses the Caledonia By-pass regularly. |
| Mr. Cairns R.R. # 2 Caledonia, Ontario | No written comments. |
| Mr. H. Hyslop R.R. # 2 Caledonia, Ontario LOA 1A0 | Requires Townline Road be kept open for his farm operation. |

APPENDIX D

Second Series of Public Information Centres



Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Results of the Second Series of Public Information Centres

DILLON

October 1985

TABLE OF CONTENTS

| | PAGE |
|---|------|
| 1. INTRODUCTION | 1 |
| 2. CENTRE ORGANIZATION | 1 |
| 3. CONTACT WITH ELECTED REPRESENTATIVES | 3 |
| 4. MAJOR ISSUES | 4 |
| 4.1 Direct Property Impacts | 4 |
| 4.2 Indirect Property Impacts and Proximity Effects | 4 |
| 4.3 White Church Road Realignment | 5 |
| 4.4 Need and Justification | 5 |
| 4.5 Farm Impacts | 5 |
| 4.6 Road Closures | 5 |
| 4.7 Staging and Timing | 6 |
| 4.8 Unity Road Hamlet | 6 |

LIST OF APPENDICES

| | |
|------------|---|
| APPENDIX A | LISTING OF SPECIAL INTEREST GROUPS AND MEMBERS OF THE PUBLIC WHO RECEIVED SPECIFIC LETTERS INFORMING OF THE PUBLIC INFORMATION CENTRES - October 1985 |
| APPENDIX B | COPIES OF TEXT DISPLAYS USED AT THE PUBLIC INFORMATION CENTRES |
| APPENDIX C | PUBLIC COMMENTS 1. Seneca Unity School - October 17, 1985 2. Marritt Hall Ancaster - October 18 1985 |
| APPENDIX D | RECORDS OF PRESENTATIONS TO MUNICIPAL ELECTED REPRESENTATIVES October 7 15 and 29, 1985 |

1. INTRODUCTION

The second round of Public Information Centres for the Highway 6 (New) - Hamilton to Caledonia Route Location and Preliminary Design Study were held as follows:

1. Thursday, 17 October 1985, Seneca Unity School
Unity Road
Caledonia, Ontario
2. Friday, 18 October 1985, Marritt Hall
Ancaster Fairgrounds
Highway 53
Ancaster, Ontario

The centres were opened to the general public from 2:00 p.m. to 5:00 p.m. and from 7:00 p.m. to 9:00 p.m. each day.

On 18 October 1985 the centre was also opened to various Provincial Ministries and Agencies. At that session the project was presented to them by MTC and consultant staff.

The main purposes of this series of centres were to:

1. Review study progress to date.
2. Present the technically recommended alignment and the reasons for its selection.
3. Provide the public an opportunity to ask questions and comment on the study.
4. Discuss the future study schedule.

2. CENTRE ORGANIZATION

The Information Centres were advertised through a brochure distributed within the general study area. A copy of the brochure is shown as Exhibit 1.

Advertisements were also run in the local newspaper as follows:

1. Regional News This Week - 1 October 1985
2. Ancaster Journal - 2 October 1985
3. Grand River Sachem - 2 October 1985
4. Hamilton Spectator - 3 October 1985

Future Schedule

Following the second series of Public Information Centres, the third series of centres will be held as follows:

1. Public Information Centres illustrating the preliminary design of the preferred alignment (i.e. showing property impacts, etc.) - Spring 1986.
2. Study completion and submission of formal Environmental Assessment Report - Fall 1986.

Additional Information

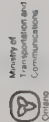
Interested parties can obtain additional information from any of the following individuals:

Mr. Peter Shaver, P. Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9
Phone: 224-7661

Mr. Ian Williams, P. Eng.
Project Engineer
M.V. Division
47 Sheppard Avenue East, Willowdale, Ontario, M2N 6H5
Phone: 223-4646

Mr. A. Jay Nuttall
Project Coordinator - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9
Phone: 224-7578

Written comments on the project are also invited.



Highway 6 (New) HAMILTON TO CALEDONIA ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Public Information Centres

SECOND SERIES

ONTARIO GOVERNMENT NOTICE

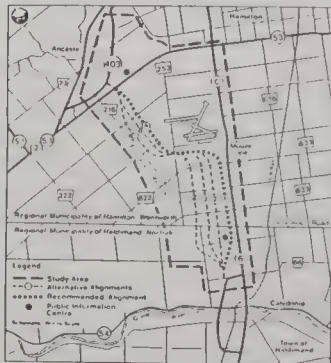
HIGHWAY 6 (NEW) HAMILTON TO CALEDONIA PUBLIC INFORMATION CENTRES (SECOND SERIES)

The second series of Public Information Centres have been arranged to present the recommended alignment and the reasons for its selection.

The recommended alignment is A 1 shown on the Exhibit below

The Centres are as follows:

- | | |
|---|---|
| 1 Thursday, 17 October 1985 2:00 p.m. to 5:00 p.m. and 7:00 p.m. to 9:00 p.m. Seneca Unity School Unity Road Haldimand, Ontario | 2 Friday, 18 October 1985 2:00 p.m. to 5:00 p.m. and 7:00 p.m. to 9:00 p.m. Marrill Hall Ancaster Fairgrounds Highway 53 Ancaster, Ontario |
|---|---|



The project is subject to the full requirements of the Ontario Environmental Assessment Act

For further information please contact

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Phone: 224-7578

Written comments are invited



In addition there were numerous resource boards and reports available for detailed questions. The report on the First Series of Public Information Centres was also available for the public to review.

Included in this report as Appendix B are copies of the text displays.

Comment sheets were made available for members of the public to note their comments. People were invited to either mail the sheets in or leave them at the centre. Some sheets were also filled out by the study team during discussions with members of the public. A specific questionnaire was made available for active farmers in the area (see Exhibit 3). Completed copies of the comment sheets are available upon request from the MTC Regional Office.

Members of the MTC project staff and the consultant staff were in attendance at all times.

The attendance at the centres was good and was estimated, based upon the sign in sheets and the study team members' observations, as follows:

| | |
|-----------------|-------|
| 17 October 1985 | - 120 |
| 18 October 1985 | - 100 |
| Total | - 220 |

Copies of memos summarizing comments made by members of the public are included in Appendix C.

3. CONTACT WITH ELECTED REPRESENTATIVES

Prior to these information centres, presentations were held with various elected representatives. These meetings were as follows:

1. 7 October 1985 - Township of Glanbrook Council
2. 7 October 1985 - Town of Ancaster Council
3. 15 October 1985 - Engineering Committee of the Regional Municipality of Haldimand-Norfolk
4. 15 October 1985 - Town of Haldimand Council

The purpose of these meetings was to allow the elected representatives to provide comments as well as to show them the data that would be presented at the Public Information Centres.

An offer was made to make a presentation to the City of Hamilton Transportation and Environment Committee. However, the committee did not deem a presentation necessary and an information package was forwarded to the staff representative for distribution to all committee members. The information package included:

1. 1:10000 aerial mosaic of the study area showing the technically recommended alignment.
2. Comparison tables showing the detailed assessment of alternatives A, B, C and 1, 2, 3, 4.
3. Brochures announcing the 2nd series of Public Information Centres.

Due to scheduling difficulties a presentation was not possible to the Regional Municipality of Hamilton-Wentworth Transportation Committee prior to the Public Information Centres. However, the Public Information Centre was opened early on 18 October 1985, from 1:00 - 2:00 p.m., for Regional Councillors to observe the displays. In addition, a presentation was made to the Transportation Committee on 29 October 1985.

Minutes of the various presentations to the elected representatives are included in Appendix D.

4. MAJOR ISSUES

Based on an analysis of the comments received, the major issues raised by members of the public are identified below.

4.1 DIRECT PROPERTY IMPACTS

Many of those affected by the technically recommended alignment attended the Information Centres and expressed considerable concern over impact to their property.

4.2 INDIRECT PROPERTY IMPACTS AND PROXIMITY EFFECTS

Many people noted that proximity effects of the new Highway were also very important. The major concern in this regard was that of a residence that may not be directly affected by the new Highway but which, after construction, would remain close to the new road. Under current MTC policies such properties would not be acquired by the Ministry as part of the Highway construction requirements.

4.3 WHITE CHURCH ROAD REALIGNMENT

The technically recommended alignment includes an interchange at a realigned White Church Road along with a new connection to existing Highway 6 south of Mount Hope.

This plan calls for a cul-de-sac on the by-passed portion of existing White Church Road immediately west of Highway 6 New. Many people attending the centres expressed concern over the cul-de-sac and closing of White Church Road to through traffic. Several questions with regard to the closing of White Church Road were also expressed at the Township of Glanbrook Council presentation.

White Church Road is viewed as a major east/west connection within the study area, and concern was expressed about the disruption to this east/west movement. In addition, some farmers expressed concerns over out-of-the-way travel required for farm machinery movements.

4.4 NEED AND JUSTIFICATION

Several people observed that there are no existing traffic congestion problems on Highway 6 in the study area. Thus they could not understand the need for a new Highway facility. These people were informed that the Highway was intended to encourage growth in the Townsend/Nanticoke area and to provide access to the recently expanded Hamilton Airport.

4.5 FARM IMPACTS

The study area is predominantly agricultural, with 70% of the area being Class 1 agricultural land. Many farmers from the area attended the Information Centres. Those not directly affected by the technically recommended alignment questioned if there would be any road closures caused by Highway 6 New.

Some farmers directly impacted by the technically recommended alignment expressed concern over the effects to their operations and loss of agricultural land.

4.6 ROAD CLOSURES

Questions were raised with regard to the closing of any roads within the study area. It was explained that no roads would be closed with the exception of a short section of White Church Road which would be realigned to join existing Highway 6.

4.7 STAGING AND TIMING

There were many questions raised about the timing of construction and the construction staging sequence that will be adopted.

It was explained that no facility could be built within 5 years due to the approval process. Following this, Highway 6 (New) must compete with other projects for provincial funding. Highway 6 (New) would probably be staged from Highway 403 southerly in a fairly continuous manner to the existing Caledonia By-pass. In all likelihood Highway 6 (New) would be constructed as a 2 or 4 lane arterial facility initially, even though protection was being sought for a full ultimate 6 lane freeway.

4.8 UNITY ROAD HAMLET

There were several members of the public who were concerned with the crossing of Highway 6 (New) at Unity Road. After reviewing the sketch showing Highway 6 (New) in a deep cut and a table showing the expressed concerns and proposed mitigating measures, several people were satisfied that the crossing was being handled in a satisfactory manner. However, there were still some members of the public who did not want any crossing of Highway 6 (New) at Unity Road because of its potential effects such as noise and pollution on the school and its potential effects on their property values and on existing services in the community such as snow plowing.

Listing of special interest groups and members of the public who received specific letters informing of the Public Information Centres

October 1985

Ms. Ann Hughson
Office Administrator
Architectural Conservancy of Ontario
191 College Street
Toronto, Ontario
M5T 1P9

■
Mrs. Heather R. Broadbent
President
Ontario Historical Society
78 Dunloe Road, Room 204
Toronto, Ontario
M5P 2T6

■
Mr. Harold Lampman
L.A.C.A.C. Chairperson
Town of Ancaster
c/o Town Clerk
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

■
L.A.C.A.C. Chairperson
Township of Glanbrook
c/o Township Clerk
P.O. Box 130
Mount Hope, Ontario
L0I 1W0

■
Mr. Howard Mark
L.A.C.A.C. Chairperson
City of Hamilton
c/o City Clerk
71 Main Street West
Hamilton, Ontario
L8N 3T4

■
Ms. Mary E. Martindale
L.A.C.A.C. Chairperson
Town of Haldimand
c/o Town Clerk
P.O. Box 400
Cayuga, Ontario
N0A 1E0

■

Mr. D. Kennedy, Chairman
Sierra Club of Ontario
47 Colborne Street
Toronto, Ontario
M5E 1E3

■
Mr. T. Ruzza
863 Main Street East
Hamilton Ontario
L8M 1M2

■
Mr. Bill Kronas
70 Emerald Street South
Hamilton, Ontario
L8N 2V3

■
Mr. Stuart Jones
Mines Road
R.R. #2
Caledonia, Ontario
N0A 1A0

■
Mr. William Murray
112 Alderson Drive
Hamilton Ontario
L9B 1G5

■

Mr. P.J. Stokes
Architectural Conservancy of Ontario
191 College Street
Toronto, Ontario
M5T 1P7

■

Ms. P. Heppes
Canadian Nature Federation
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75 Albert Street
Ottawa, Ontario
K1P 6G1

■

Mr. H. Clare, Treasurer
Conservation Council of Ontario
Suite 202
74 Victoria Street
Toronto, Ontario
M5C 2A5

■

Mr. R.L. Renwick
Provincial Manager
Ducks Unlimited
Unit 10
240 Bayview Drive
Barrie, Ontario
L4N 4Y8

■

Mr. G. Arras
Federation of Ontario Naturalists
355 Lesmill Road
Don Mills, Ontario
M3B 2W8

■

Mr. C. Sauriol, Exec. Director
Nature Conservancy of Canada
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Suite 1704
Toronto, Ontario
M4S 2E7

■

Ontario Federation of Agriculture
491 Eglinton Avenue West
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M5N 3A2

■

The Chairperson
Ancaster Township Historical Society
P.O. Box 7163
Ancaster, Ontario
L9G 3L4

■

The Chairperson
Head of the Lake Historical Society
P.O. Box 896
Hamilton, Ontario
L8N 3P6

■

Mrs. R.C. Walker
Tweedsmuir History Curator
Hamilton, Ontario
R.R. #1
St. George, Ontario
N0E 1N0

■

The Curator
Caledonia Museum
Caithness Street West
Caledonia, Ontario
N0A 1A0

■

The Curator
Haldimand County Museum
County Court House Park
Cayuga, Ontario
N0A 1E0

■

Hamilton-Wentworth
Federation of Agriculture
ATTENTION: John Yovanov,
President
#2 Branchton, Ontario
NOB 1LO

■
Hamilton-Wentworth
Federation of Agriculture
ATTENTION: Joan Lowden,
Secretary
#2 Mount Hope, Ontario
LOR 1WO

■
Christian Farmers Association
of Wentworth-Brant
ATTENTION: Harry Bootsma,
President
#1 Brantford, Ontario
N3T 5L4

■
Christian Farmers Association
of Wentworth-Brant
ATTENTION: Ralph Schuurman,
Secretary
#2 Branchton, Ontario
NOB 1LO

■
D. Ross Ferguson
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■

Mr. Henry Kruis
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■
Ms. Jeannie McNaughton
Planner
Ministry of Municipal Affairs
& Housing
Plans Administration Branch
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■
Mr. Sam Colaicovo
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N3Y 3W1

■
Ms. Arlene Johnson
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Mount Hope, Ontario
LOR 1WO

■
Mr. Edward Granasiuk
285 Shoreacres Road
Burlington, Ontario
L7L 2H3

■
Mr. John Pasternak
R.R. #2
Caledonia, Ontario
NAO 1AO

■
Haldimand-Norfolk Federation
of Agriculture
ATTENTION: Peter Ondrich, President
R.R. #3
Hagersville, Ontario
NOA 1HO

■
Haldimand-Norfolk Federation
of Agriculture
ATTENTION: Sheilagh Moerschfelaer
R.R. #1
Selkirk, Ontario
NOA 1PO

■
Mr. V. Suffoletta
Box 503
Caledonia, Ontario
NOA 1AO

■

Cronkwright Transport Limited

ATTENTION: Mr. James Wood

Operations Manager

P.O. 551

Simcoe, Ontario

N3Y 4N8

■

Bruce R. Smith Limited

ATTENTION: Mr. D. Rowntree

Traffic Manager

R.R. #2

Simcoe, Ontario

N3Y 4K1

■

Slack Transport Limited

ATTENTION: Mr. F. Walker

Traffic Manager

P.O. Box 579

Caledonia, Ontario

NOA 1A0

■

Nelson Steel Company

ATTENTION: Mr. W. McCloy

Plant Superintendent

19 Hawk Street

Nanticoke, Ontario

■

Air Products

ATTENTION: Mr. F. Adams, CITT Distribution

Terminal Manager

Division of Stearns Catalytic Limited

Lake Erie Industrial Park

Regional Road #3

P.O. Box 300

Nanticoke, Ontario

NOA 1L0

■

Stelco

ATTENTION: Mr. W.H. Sheffield,

Transportation Manager - Central Region

Stelco Tower

Hamilton, Ontario

L8N 3T1

■

Domtar Construction Materials

ATTENTION: Mr. J.F. Card

Works Manager

P.O. Box 250

Caledonia, Ontario

■

Standard Aggregates

ATTENTION: Mr. B. Buckley

Sales Superintendent

Haldimand Quarry

P.O. Box 29

Hagersville, Ontario

■

Verspeeten Cartage Limited

ATTENTION: Mr. R. Verspeeten

Traffic Manager

67 Dalton Road

Delhi, Ontario

N4B 1B4

■

Iveys Incorporated

ATTENTION: Mr. Walter C. Long

Roselane Drive

Port Dover, Ontario

NOA 1N0

■

Texaco Canada Incorporated

ATTENTION: Mr. J.E. Moss

Superintendent Sales Terminal

P.O. Box 160

Jarvis, Ontario

NOA 1J0

■

Laidlaw Transport Limited

ATTENTION: Mr. Henri Vandenbussche

Terminal Manager

P.O. Box 430

Hagersville, Ontario

NOA 1H0

■

McBurney Transport Limited

P.O. Box 427

ATTENTION: Mr. Keith McBurney

Hagersville, Ontario

NOA 1H0

■

Cayuga Aggregate & Hauler

ATTENTION: W.R. McKenzie, President

R.R. #7

Simcoe, Ontario

■

Town of Ancaster
ATTENTION: L.V. Hayden
Town Clerk
300 Wilson Street East
Ancaster, Ontario
L9G 2B9

■
The Corporation of the
Township of Glanbrook
ATTENTION: Mr. C. Switzer
Clerk
P.O. Box 130
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L0R 1W0

■
The Regional Municipality
of Hamilton-Wentworth
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Clerk
119 King Street West
Hamilton, Ontario
L8N 3V9

■
City of Hamilton
ATTENTION: Mr. E.A. Simpson
Clerk
71 Main Street West
Hamilton, Ontario
L8N 3T4

■
The Regional Municipality
of Haldimand-Norfolk
ATTENTION: Mrs. M.L. Johnston
Clerk
70 Town Centre Drive
Townsend, Ontario
N0A 1S0

■
Town of Haldimand
ATTENTION: Mrs. S.R. Troubridge, AMCT
Clerk
P.O. Box 400
Cayuga, Ontario
N0A 1E0

Dr. and Mrs. J.S. Allen
133 George Street
Hamilton, Ontario
L8P 1E4 ■ Dr. and Mrs. Allen ■
Ms. June Asselstine
33 Lynwood Road
Hamilton, Ontario
L9C 6M7 ■ Ms. Asselstine ■
Mr. Edward R. Baughan
417 East 42nd Street
Hamilton, Ontario
L8T 3A8 ■ Mr. Baughan ■
Mr. and Mrs. B. Blacklock
135 Province Street North
Hamilton, Ontario
L8H 4H7 ■ Mr. and Mrs. Blacklock ■
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Ms. Barbara Cartnell
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L9A 1R9 ■ Ms. Cartnell ■
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NO ADDRESS ■ ■
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Ms. Vera Catherwood
8 Bethany Court
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L9C 7A4 ■ Ms. Catherwood ■
Mr. Stan E. Catherwood
24 Rosedine Avenue
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Mr. M.E. Cautice
20 Littlejohn
Dundas, Ontario
L9H 4G7 ■ Mr. Cautice ■
Mr. and Mrs. G. Cave
78 Riverdale Drive
Hamilton, Ontario
L8E 1K3 ■ Mr. and Mrs. Cave ■
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L7R 3G9 ■ Mr. Chapman ■

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 Mrs. Hyde
 Mr. and Mrs. N. Infurnari
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 L9C 7A4
 Mr. and Mrs. Infurnari
 Mrs. Elsie Jones
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 Mrs. Jones
 Mr. Kimber
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 L9C 6M7
 Mr. Kimber
 Ms. Bozana Knezevic
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 L8G 2H3
 Ms. Knezevic
 Mrs. Diane Lester
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 Apt. 66
 Stoney Creek, Ontario
 L8G 3W1
 Mrs. Lester
 Ms. S. Mary LeTourneau
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 L8P 2H5
 Ms. LeTourneau
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 L8K 2P2
 Mr. and Mrs. Lloyd
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 L9C 7A4
 Dr. MacIntyre
 Mrs. L. McKay
 359-10th Concession
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 Freelon, Ontario
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 Ms. Morin
 A. Nave
 NO ADDRESS
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 Mrs. Nelson

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 Ms. Osburn
 Mr. and Mrs. Vincent Paolini
 54 Tuxedo Avenue South
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 L8K 2R6
 Mr. and Mrs. Paolini
 Mr. Travis J. Phillips
 President
 Colonial Fence Erectors
 627 Iroquois Avenue
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 Mr. Phillips
 Mrs. Frances Plunkett
 33 Fennell Avenue East
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 L9A 1R6
 Mrs. Plunkett
 Mr. and Mrs. Edward Post
 166 Ranwood Court
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 L8W 1V4
 Mr. and Mrs. Post
 Ms. Sandy Post
 166 Ranwood Court
 Hamilton, Ontario
 L8W 1V4
 Ms. Post
 Mrs. Jean E. Roy
 NO ADDRESS
 Mrs. Charles Runacres
 29 Lilacside Drive
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 L8V 2L5
 Mrs. Runacres
 Ms. Jean A. Russell
 260 King Street East
 Stoney Creek, Ontario
 L8G 1M1
 Ms. Russell
 Miss Frances P. Scott
 58 Clarendon Avenue
 Hamilton, Ontario
 L9A 3A1
 Miss Scott
 Miss Nancy Setterlund
 46 Arkledun
 Apt. 206
 Hamilton, Ontario
 L8N 2H8
 Miss Setterlund
 Mr. and Mrs. John P. Singer
 32 Ward Avenue
 Hamilton, Ontario
 L8S 2E6
 Mr. and Mrs. Singer
 Mrs. W. Shaver
 46 Terrace Drive
 Hamilton, Ontario
 L9A 2Y6
 Mrs. Shaver

Mrs. Joan Staines
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 L8G 1H4 Mrs. Staines
 Mr. and Mrs. M. Stewart
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 L8P 2R5 Mr. and Mrs. Stewart
 Mr. and Mrs. D. Townson
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 Suite 1002
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 N2J 4L6 Mr. and Mrs. Townson
 Mr. and Mrs. S. Vida
 493 Clarence Street
 Port Colborne, Ontario
 L3K 3H3 Mr. and Mrs. Vida
 Mrs. Ivy M. Walker
 32 Empress Avenue
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 L9A 1M3 Mrs. Walker
 The Walker Family
 192 Grant Avenue
 Hamilton, Ontario Walker Family
 Ms. Dorothy West
 110 Stoney Brook Drive
 Apt. 304
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 L8G 4R9 Mrs. West
 Mr. and Mrs. J. White
 111 Judith Crescent
 Ancaster, Ontario Mr. and Mrs. White
 Ms. Joan Wiedt
 1505 Upper James Street
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 L9B 1K2 Mrs. Wiedt
 Mr. William Winterbottom
 14 Braemar Place
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 L9C 1E1 Mr. Winterbottom
 Ms. Claire V. Wright
 16 Bethany Court
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 L9C 7A4 Mrs. Wright
 Mrs. Phyllis Yaxley
 5166 Lakeshore East
 Apt. 207
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 L7L 1C3 Mrs. Yaxley
 Mrs. Edna Yorkston
 1264 Cannon Street East
 Hamilton, Ontario
 L8M 1V4 Mrs. Yorkston

Ms. Sharon Addison
 481 East 25th Street
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 L8V 3B8 Ms. Addison
 Mrs. John Aerts
 135 East 44th Street
 Hamilton, Ontario
 L8T 3H3 Mrs. Aerts
 Ms. Marsha Agostinelli
 140 Wellington Street South
 Apt. 904
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 L8N 2R5 Ms. Agostinelli
 Ms. Charmain Appleton
 3107 O'Hagen Drive
 Mississauga, Ontario
 L5C 2C4 Ms. Appleton
 Ms. Sharon Appleton
 3107 O'Hagen Drive
 Mississauga, Ontario
 L5C 2C4 Ms. Appleton
 Mrs. Margaret Arayton
 7 Florence Street
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 L8R 1W3 Mrs. Arayton
 Mr. Louis Boin
 147 Westwood Avenue
 Hamilton, Ontario
 L8S 2E7 Mr. Boin
 Mrs. Cameron
 1964 Main Street West
 Hamilton, Ontario
 L8S 1J5 Mrs. Cameron
 Mrs. Judy Carbone
 244 Miller Road
 Stoney Creek, Ontario
 L8E 2G9 Mrs. Carbone
 Mrs. Chalklin
 85 Alderson Drive
 Hamilton, Ontario
 L9B 1G4 Mrs. Chalklin
 Ms. Joan Chamberlain
 580 East Mall
 Apt. 1606
 Islington, Ontario
 M9B 4A7 Ms. Chamberlain
 Mr. William Christie
 400 East 16th
 Hamilton, Ontario
 L9A 4K5 Mr. Christie

Mr. Pat Cipolla
 Parkdale Kitchens
 400 Parkdale Avenue North
 Hamilton, Ontario
 L8H 5Y2@Mr. Cipolla@
 Mr. Kenneth Cook
 197 Locke Street North
 Hamilton, Ontario
 L8R 3B1@Mr. Cook@
 Mrs. Harold Coon
 1170 Fennel Avenue East
 Apt. 112
 Hamilton, Ontario
 L8T 1S7@Mrs. Coon@
 Ms. Sara Cope
 18 Passmore Street
 Stoney Creek, Ontario
 L8G 3J5@Ms. Cope@
 Mr. John Daehelt
 192 Aberfoyle Avenue
 Hamilton, Ontario
 L8K 4A5@Mr. Daehelt@
 Ms. Mary Driscoll
 9113 Twenty Road West
 Mount Hope, Ontario@Ms. Driscoll@
 Mr. John Duckett
 NO ADDRESS@
 Ms. Susan Evans
 180 Edinburgh Road North
 Guelph, Ontario
 N1H 5R7@Ms. Evans@
 Mrs. Gordon Fell
 87 Owen Place
 Hamilton, Ontario
 L8G 2H3@Mrs. Fell@
 Ms. Anne Fisher
 2488 Trevor Drive
 Oakville, Ontario@Ms. Fisher@
 Mrs. Gorch
 575 Queenston Road
 Apt. 424
 Hamilton, Ontario
 L8K 1K1@Mrs. Gorch@
 Mrs. Tom Gray
 334 East 31st Street
 Hamilton, Ontario
 L8V 3P8@Mrs. Gray@
 Ms. Sherrie-Lee Hawley
 P.O. Box 81
 Mississauga, Ontario
 L5A 2Y9@Ms. Hawley@

Mr. Bruce Healy
 11 Parklands Drive
 Hamilton, Ontario
 L8K 4W8@Mr. Healy@
 Mrs. E. Hodgins
 192 Aberfoyle Avenue
 Hamilton, Ontario@Mrs. Hodgins@
 Mr. Harry Ikeda
 573 Beach Boulevard
 Hamilton, Ontario
 L8H 6X8@Mr. Ikeda@
 Mr. K. Ireland
 78 Normanhurst Avenue
 Hamilton, Ontario
 L8H 5M6@Mr. Ireland@
 Ms. Cynthia Janzen
 342 Aberdeen Avenue
 Apt. 2
 Hamilton, Ontario
 L8P 2R5@Ms. Janzen@
 Ms. Vivian Johnson
 5 Harvest Court
 Greensville, Ontario
 L9H 5K2@Ms. Johnson@
 Ms. Sharon Johnson
 816 Elm Street
 Port Colborne, Ontario
 L3K 4R4@Ms. Johnson@
 Mrs. Innes Johnson
 135 Dalewood Avenue South
 Hamilton, Ontario
 L8S 1Z3@Mrs. Johnson@
 Ms. Elizabeth Juniper
 835 Alexander Road
 Ancaster, Ontario
 L9G 3E7@Ms. Juniper@
 Ms. Nancy Latniak
 241 Highway 8
 Stoney Creek, Ontario
 L8G 1E2@Ms. Latniak@
 Mr. Cory Lebuffe
 140 Wellington Street South
 Apt. 904
 Hamilton, Ontario
 L8N 2R5@Mr. Lebuffe@
 Ms. Pearl Leriche
 1538 Garth Street
 Hamilton, Ontario@Ms. Leriche@
 Mr. and Mrs. C. Makowski
 310 Arlington Avenue
 Toronto, Ontario
 M6C 2Z7@Mr. and Mrs. Makowski@

Dr. D. Ian Malcolm
 69 Auchmar Road
 Hamilton, Ontario
 L9C 1G6 Dr. Malcolm
 Mr. Manning
 747 King Street West
 Apt. 1
 Hamilton, Ontario
 L8S 1J9 Mr. Manning
 Mr. and Mrs. Thomas McGuire
 700 Upper Kennilworth
 Apt. 302
 Hamilton, Ontario
 L8T 4Y8 Mr. and Mrs. McGuire
 Mrs. L. McKay
 359 - 10th Concession
 R.R. #1 Freelon, Ontario
 L0R 1K0 Mrs. McKay
 Ms. Katherine McKenzie
 16 Jamieson Drive
 Dundas, Ontario
 L9S 5A2 Ms. McKenzie
 Ms. Marie Meloche
 188 Locke Street South
 Hamilton, Ontario
 L8P 4B3 Ms. Meloche
 Mrs. C.S. Milmine
 43 James Avenue
 Stoney Creek, Ontario
 L8G 3K5 Mrs. Milmine
 Mr. and Mrs. Neil Oliphant
 34 Sycamore
 Hamilton, Ontario
 L8T 3N7 Mr. and Mrs. Oliphant
 Mr. and Mrs. Ron Paolini
 121 Beland Avenue South
 Hamilton, Ontario
 L8K 3T5 Mr. and Mrs. Paolini
 Mrs. G. Patterson
 9 Cecilia Court
 Hamilton, Ontario
 L8T 2E8 Mrs. Patterson
 Mrs. Albert Richards
 NO ADDRESS
 Mrs. Albert Richards
 NO ADDRESS
 Mrs. Patrick Robertson
 541 Upper Wentworth
 Hamilton, Ontario
 L9A 4T8 Mrs. Robertson
 Mr. H. Rogerson
 71 East 39th Street
 Hamilton, Ontario
 L8B 4H2 Mr. Rogerson

Ms. Nancy Rose
 14 Stormy View Drive
 Ithaca, New York
 U.S.A. 14850 Ms. Rose
 Ms. Nancy Rose
 81 Dromore Crescent
 Hamilton, Ontario
 L8S 4B1 Ms. Rose
 Mrs. Roy Salmon
 139 Glen Road
 Hamilton, Ontario
 L8S 3M8 Mrs. Salmon
 Mr. J.W. Scott
 106 Haddon Avenue South
 Hamilton, Ontario
 L8S 1X8 Mr. Scott
 Mr. Carl Shaver
 680 Regency Court
 Unit 95
 Burlington, Ontario
 L7N 3L9 Mr. Shaver
 Mr. Smith
 150 Wood Street East
 Hamilton, Ontario Mr. Smith
 Mr. and Mrs. Solski
 444 Quigley Road
 Hamilton, Ontario
 L8K 5N5 Mr. and Mrs. Solski
 Ms. Susan Stratas
 213 Dundurn Street South
 Hamilton, Ontario
 L8T 4K6 Ms. Stratas
 Mr. Cliff Turkstra
 c/o Turkstra Lumber
 1050 Upper Wellington
 Hamilton, Ontario
 L9A 3S6 Mr. Turkstra
 Mrs. Norma Warner
 P.O. Box 482
 Cambridge, Ontario
 N1R 4V9 Mrs. Warner
 Mr. Wattie
 45 Brayecrest Drive
 Stoney Creek, Ontario
 L8G 3A8 Mr. Wattie
 Mrs. Dorothy Westcott
 213 Locke Street
 Dunnville, Ontario
 N1A 1V3 Mrs. Westcott
 Mr. Bob Wiley
 208 Rosemount Avenue
 Port Colborne, Ontario
 L3K 5R4 Mr. Wiley

Transportation Objectives

Copies of text displays used at the
Public Information Centres

October 1985

- Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
- Increase use of the Caledonia By-Pass.
- Improve access and provide flexibility for development in Townsend / Nanticoke.
- Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
- Select a route which can be stage - constructed in a realistic and economical manner.

| Study Objective | Provide access from the airport to the existing Provincial freeway system to the east of Hamilton and to Hamilton Island | Increase use of the Caledonia Bypass | Improve access and provide flexibility for Townsends / Nanticoke | Improve access to the industrial area of lower Hamilton such access currently provided by the local road system | Select a route which can be staged - constructed in a realistic and economical manner |
|-------------------------|---|---|--|---|---|
| West Corridor | Provides a direct connection from the airport to the existing Provincial freeway system | Provides the best access to areas west of Hamilton | Provides good access to Townsends / Nanticoke | Good access to the industrial area of lower Hamilton Hamilton Perimeter Industrial Road (a.m.) | Can be staged independently of the existing N-S / E-W |
| Central Corridor | Provides an in-direct connection from the airport to the existing Provincial freeway system (assuming the freeway system N-S / E-W is in) | Provides the best access to Hamilton Island (from Hamilton) | Provides good access to Townsends / Nanticoke (assuming the N-S / E-W is in) | Good access to the industrial area of lower Hamilton (assuming the N-S / E-W is in) | Staging depends on the N-S / E-W |
| East Corridor | Provides an in-direct connection from the airport to the provincial freeway system (assuming the freeway system N-S / E-W is in) | Provides the best access to areas east of Hamilton | Provides good access to Townsends / Nanticoke (assuming the N-S / E-W is in) | Very good access to the industrial area (assuming the N-S / E-W is in) | Can be staged on the N-S / E-W |

LEGEND

Denotes key factors in selecting the west corridor
N-S/E-W Stands for the Region's proposed North - South Parkway and East -West Arterial

Dillon

General Steps in the Environmental Assessment Process

(If you require more information please ask)

1. The route location and planning study involves all interested agencies , groups and the general public through public information centres.
2. The results of the study are documented in an environmental assessment (EA) Report.
3. The EA Report is formally submitted to the Ministry of the Environment (MOE) who then circulate the report to all provincial Ministries and agencies for review and comment.
4. These comments are compiled by the MOE into an official government review document.
5. The MOE then make the EA Report and the government review available to the public and municipalities.
6. The public then have 30 days to submit comments to the MOE.
7. Following receipt and review of public comments the MOE can either :
 - approve the EA unconditionally,
 - approve the EA with conditions, or
 - call a hearing before the environmental assessment Board (EAB).
8. If a hearing is held the EAB can recommend approval or non-approval of the project.
9. Final approval is the responsibility of the Minister of the Environment with Cabinet approval.

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Future Schedule

Following the second series of Public Information Centres, the anticipated general study schedule is as follows:

1. Public Information Centres (illustrating the preliminary design of the preferred alignment (i.e. showing property impacts, etc.) - Spring 1986.
2. Study completion and submission of formal Environmental Assessment Report - Fall 1986.

Public input will be requested at the Public Information Centre in 1 above

Additional Information

Interested parties can obtain additional information from either of the following individuals:

Mr. Peter Shaver, P. Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario. M2N 6E9
Phone: 224-7661

Mr. Ian Williams, P. Eng.
Project Manager
M. M. Dillon Limited
47 Sheppard Avenue East, Willowdale, Ontario. M2N 6H5
Phone: 229-4646

Mr. A. Jay Nuttall
Environmental Coordinator - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario. M2N 6E9
Phone: 224-7578

Written comments on the project are also invited.

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Unity Side Road Hamlet

| Expressed Concerns | Proposed Mitigation |
|--------------------|---|
| Noise | <ul style="list-style-type: none">• location of highway in cut minimizes noise impacts |
| Visual | <ul style="list-style-type: none">• location in cut minimizes view of highway from Unity Road (see sketch)• tree planting can screen views from adjacent properties and pedestrian and vehicular views from Unity Road |
| Safety | <ul style="list-style-type: none">• a bridge is provided on Unity Road to cross over Highway 6 New• right-of-way at Unity Road is fenced (see sketch) |
| Travel Patterns | <ul style="list-style-type: none">• no change in vehicular and pedestrian access to and from the hamlet• volumes on existing Highway 6 will be reduced |
| Driveway Access | <ul style="list-style-type: none">• no change |
| Traffic Volumes | <ul style="list-style-type: none">• no increase in traffic volumes on Unity Road• width of Unity Road is unchanged |
| School | <ul style="list-style-type: none">• minimal property taking• no effects on playground and parking lot |

Highway 6 (New)

Detailed Assessment of
Alternative Alignments 1, 2, 3 and 4[illegible]

Highway 6 (New)

Detailed Assessment of
Alternative Alignments A, B and C[illegible]

Public Comments:

- 1. Seneca Unity School – October 17, 1985**
- 2. Marritt Hall, Ancaster – October 18, 1985**

MEMO TO : File

cc : Mr. P. Shaver, MTC
Mr. J. Nuttall, MTC
Mr. B. Ogden, MTC
Mr. F. Leech, MTC
Mr. M. Cohen, Transport Canada
Ms. J. Tennyson, M.M. Dillon
Mr. I. Williams, M.M. Dillon
Mr. J. Horton, M.M. Dillon

FROM : J. Horton

SUBJECT: : Highway 6 New - Hamilton to Caledonia
Route Location and Preliminary Design
Study

DATE : 22 October 1985

FILE : 9576-01/13

Second Series of Public Information Centres - Seneca Unity School, Unity Road, Caledonia

The second series of public information centres for this project were held on the 17th and 18th of October 1985.

This memorandum details the comments made by members of the public at the second series of information centres held on 17 October 1985 at the Seneca Unity School, Unity Road, Caledonia, Ontario.

Attendance at the centre was good, with an estimated total number of approximately 120 people. This estimate was based on the sign-in sheet provided and the study team's opinion of the number of people who may not have signed in.

The information centre was set up in the gymnasium of the Seneca Unity School. The following summarizes the exhibits and the centre organization:

1. sign-in sheets at the entrance way.
2. tables with comment forms, pens, pencils and a box for the comment forms.
3. a 1:50000 plan showing the study area from Lake Erie to Lake Ontario with the abandoned east and central corridors, and the west corridor now under study.
4. comparison table of the corridors to transportation objectives.
5. a display showing the transportation objectives.
6. a 1:5000 aerial mosaic of the study area showing the abandoned alternatives, the feasible alternatives and the technically recommended alignment.
7. 1:2000 plan showing the technically recommended alignment in detail. These plans indicated all property ownership adjacent to the recommended route.
8. a display showing the proposed cross-sections for Highway 6 (New).
9. a display showing the future schedule and parties to contact for additional information.
10. a display showing the general steps in the environmental assessment process.
11. a sketch of the crossing of Unity Road.
12. a display showing the expressed concerns and proposed mitigation of the impacts at the Unity Road Hamlet area.
13. detailed assessment of alternatives a, b, and c in tabular form.
14. detailed assessment of alternatives 1, 2, 3 and 4 in tabular form.

In addition there were numerous resource boards and reports available for detailed questions.

The project had again generated considerable interest in the community. The study team was fully occupied in answering questions and responding to concerns throughout the period of the information centre.

The team members in attendance were:

| | |
|------------------|-------------|
| Mr. P. Shaver, | MTC |
| Mr. J. Nuttall, | MTC |
| Mr. B. Ogden, | MTC |
| Mr. R. Bigger, | MTC |
| Mr. W. Donalds, | MTC |
| Ms. J. Tennyson, | M.M. Dillon |
| Mr. I. Williams, | M.M. Dillon |
| Mr. J. Horton, | M.M. Dillon |

In addition, Mr. M. Cohen of Transport Canada was on hand to answer questions related to the airport.

Comment sheets were made available to members of the public to complete. In addition, study team members completed comment sheets during discussions with some members of the public. A special questionnaire was made available to farmers in the area.

Immediately following the information centres, letters were sent to all members of the public who had completed comment forms responding to their concerns.

The following details comments made by members of the public during the information centre:

| <u>Name</u> | <u>Comments</u> | <u>Name</u> | <u>Comments</u> |
|---|--|--|--|
| Mr. H. Arnold R.R.#2 Mines Road Caledonia, Ontario NOA 1A0 | Agrees with the proposed Route #1. | Mr. & Mrs. D. Cutts R.R. #2 Caledonia, Ontario. NOA 1A0 | Are in agreement with proposal #1 providing the following concerns are met: 1) drainage problems on their property become the responsibility of MTC. 2) if the school is closed will the same services and snow plowing be provided? |
| Mr. & Mrs. W. Bates R.R.#2 Caledonia, Ontario NOA 1A0 | Believes his lands north of the alignment will be landlocked. Requested MTC purchase a right of way to provide access to these lands. Any access to these lands would require removal of trees on his woodlot. He does not wish these trees to be removed. | Ms. D. L. Davey R.R. #2 Caledonia, Ontario NOA 1A0 | Believes Route #4 is cheaper, affects fewer homes and is a more direct route to the airport. |
| Mr. H. Bothwright R.R. #2 Caledonia, Ontario NOA 1A0 | Questioned amount of farmland required, proximity to Highway 6 (New) and access to rented lands; i.e. the Whicher farm. | Mrs. E. Fuller R.R. #2 Caledonia, Ontario NOA 1A0 | Approves of the treatment of alignment #1 at the crossing of Unity Road. Agreed with the rationale selecting #1 i.e. traffic service to the Hamilton Mountain area. |
| Mrs. Connor R.R. #1 Caledonia, Ontario NOA 1A0 | Would like to know exact distance from highway to her property. Requested that a 1:2000 mosaic be supplied of the Unity Road area. | | Would like advanced planting around the alignment at Unity Road to screen the alignment prior to construction. |
| V. Cairn Unity Road West R.R. #2 Caledonia, Ontario NOA 1A0 | Favours alignment #4. | | Expressed concerns over school children climbing the fence, therefore, favoured advanced tree planting to discourage fence climbing. |

| <u>Name</u> | <u>Comments</u> |
|---|---|
| Mr. V. De Gelder R.R. #2 Caledonia, Ontario. NOA 1A0 | Favours the link between Highway 6 (New) and existing Highway 6 south of Mount Hope. |
| Mr. Harding | Believes east route would serve Stelco better. Questioned need for farm severances. Cannot see the need for this route. |
| Ms. S. Heinbecker R.R. #2 Caledonia, Ontario NOA 1A0 | Hopes that the following have been taken into consideration in the study: 1) the people in the area (who come first), 2) the economy, 3) jobs, 4) overall workability 5) real necessity. Hopes for better engineering than the Caledonia By-pass. |
| Mr. & Mrs. T. Howden R.R.#2 Caledonia, Ontario NOA 1A0 | Traffic from Highway 54 cannot get on the Caledonia By-pass. Requested consideration of future improvements for this problem. |

| <u>Name</u> | <u>Comments</u> |
|--|--|
| Mr. R. Hunsinger Regional Councillor | Five years to start construction too long. In five years the project should be completed. |
| Ms. Judy Jones Mines Road R.R. #2 Caledonia, Ontario NOA 1A0 | Very informative charts and displays. Responses to questions from consultants also informative. Well organized visual presentation. Excellent and necessary to have access to Highway 403 at Green's Road. Feels Route #1 is definitely the best choice as it will provide the most suitable connection to Highway #6 to ensure maximum service. Appreciated excellent listening and direct eye contact of consultants and their composure. Very professional. |
| Mr. Stuart Jones R.R. #2 Caledonia, Ontario NOA 1A0 | Displays were excellent. Staff were very informative and very helpful. Many of his former questions were answered satisfactorily. A very positive evening. |
| Ms. D. Kauk R.R. #2 Caledonia, Ontario NOA 1A0 | If a Highway has to be built and if it has to be route #1, then she is pleased that the Highway will be lower than the schoolyard and Unity Road will remain the same. Questioned the need for another Highway so close to existing Highway 6. |

| <u>Name</u> | <u>Comments</u> | <u>Name</u> | <u>Comments</u> |
|--|---|---|---|
| Mr. R. Killman 9727 White Church Road West Mount Hope, Ontario | Either improve White Church Road or build Highway 6 (New) to accommodate truck traffic. Suggested a traffic survey in the Fiddler's Green Road area. | Mr. M. McQueen R.R. #3 Mount Hope, Ontario | Route #1 looks okay as long as bridges are placed on all crossing roads. |
| Ms. C. Lawry Mines Road R.R. #2 Caledonia, Ontario NOA 1A0 | The recommended route has the least impact to their home on Mines Road. Appears to be the route with the minimum number of home takings. Would like to see follow through on a very high fence around the school yard and school property and tree planting. | Mr. & Mrs. D. Miller R.R. #2 Caledonia, Ontario NOA 1A0 | Agreed with selection of Route #1. Does not wish access to or from Unity Road to Highway 6 (New). |
| Ms. M. Lezak R.R. #2 Caledonia, Ontario NOA 1A0 | Agreed with selection of route #1. Thinks they will not be affected by traffic noise. | Mr. J. Parke R.R. #1 Caledonia, Ontario NOA 1A0 | Unity Church Board would be interested in purchasing any land remaining from the Simmons property that is not needed for the construction of Highway 6 (New). |
| Mrs. & Mrs. J. Little 9210 White Church Road R.R. #2 Mount Hope, Ontario LOR 1W0 | Owns house shown on Hotz in Trust property. Land is actually separate parcel, not shown on displays. Parcel is 1.14 acres in size. House would be removed for construction. Wishes to be bought out now. Questioned if alignment could be shifted to avoid their house and take Benedict property. | Ms. B. Rendall 44 Shetland Street Caledonia, Ontario NOA 1A0 | Believes that the recommended line A-1 is the most beneficial to all involved. |
| | | Mr. N. Richard R.R.#2 Caledonia, Ontario NOA 1A0 | Requested a 1:10000 aerial mosaic with the alignments. Wants a copy of the Report on the second series of Public Information Centres. Suggested that the next meeting involve a formal presentation with questions from the audience. |

| <u>Name</u> | <u>Comments</u> |
|--|---|
| Mr. & Mrs. I. Setzkohn Unity Road R.R. #2 Caledonia, Ontario NOA 1A0 | Questioned if Highway 6 New will affect water table and dry up wells in the surrounding area. Questioned if the night noise level will increase for residents and if property values will be affected. |
| Mr. W. Smith Unity Road R.R. 2 Caledonia, Ontario NOA 1A0 | The proposed new highway is too close to existing #6. New 6 lane highway facility does not coincide with the 2 lane bridge on the Caledonia By-pass. |
| Mrs. R. Swing R.R.#2 Caledonia, Ontario | Questioned need for the Highway. Questioned rationale for having a 4, 6 or 8-lane highway north of Caledonia and only 2 lanes over the By-pass. Why not fix up the other end and then see if this is necessary? |
| Mr. S. Tasker 65 Strathearne Mount Hope, Ontario | Suggested that Airport Road be improved from stoplight at Highway 6 to the airport. Agreed with the recommended alignment and suggested that it be constructed soon. |
| Ms. P. Thwaites Unity Road R.R. #2 Caledonia, Ontario NOA 1A0 | Believes that alignment #4 is better. Does not agree with the extravagance of Highway 6 New being so close to existing Highway 6. Believes alignment #1 will mess up a charming hamlet. |

| <u>Name</u> | <u>Comments</u> |
|---|--|
| Mr. Wm. Vanni P.O. Box 1482 Caledonia, Ontario NOA 1A0 | Believes Highway #6 in the area does not suffer any congestion. Believes the problem is the two lane section south of Caledonia. Believes trucks should take the By-pass around Caledonia unless they have business in the town of Caledonia. |
| Ms. D. Walkinshaw R.R. #2 Caledonia, Ontario NOA 1A0 | Expressed concerns with respect to safety, noise and pollution. Believes the recommended alignment will affect her property value because she is two doors west of the Seneca Unity School. |
| Mr. B. Weatherley R.R. #3 Mount Hope, Ontario | Has attended both public meetings and is convinced that the recommended alignment is the most logical and will have the least impact. Recommended alignment is farthest from his property. Wishes to thank the staff for the very professional manner in which his concerns were dealt with. Wished to be advised if there are any major changes to the recommended alignment. |
| Mr. A. Weatherley Snr. R.R. #3 Mount Hope, Ontario | Believes the route selected is technically the most practical. Expressed thanks for the manner in which the project has been explained and displayed. Stated that the technical people were most considerate and courteous. |

| <u>Name</u> | <u>Comments</u> |
|--------------------|---------------------------------------|
| Mrs. A. Whitehead | Believes routes #4 is preferable. |
| Unity Road | It is the least disruptive and the |
| R.R. #2 | cheapest. Recommended alignment runs |
| Caledonia, Ontario | directly beside the elementary |
| NOA 1A0 | school creating noise and air |
| | pollution for the school and the only |
| | residentially zoned community in the |
| | area. Questioned need for another |
| | highway in close proximity to |
| | existing number 6. |

| | |
|--------------------|---------------------------------------|
| Ms. W. Yallup | In favour of route #1 because it |
| R.R. #2 | disrupts the least number of people. |
| Caledonia, Ontario | Believes it will not adversely affect |
| NOA 1A0 | the Unity Road residents with noise, |
| | fumes or pollution. |

| | |
|--------------------|--|
| Mr. R. Tremblay | Will lose a small bush included in |
| 665 Highway 6 | the 8 acres severed from his property. |
| P.O. Box 882 | |
| Caledonia, Ontario | |
| NOA 1A0 | |

M.M. Dillon Limited
 Toronto, Ontario
 22 October, 1985
 9576-01/13A

| | | |
|----------|---|---|
| MEMO TO | : | File |
| cc | : | Mr. P. Shaver, MTC |
| | | Mr. J. Nuttall, MTC |
| | | Mr. B. Ogen, MTC |
| | | Mr. F. Leech, MTC |
| | | Mr. M. Cohen, Transport Canada |
| | | Ms. J. Tennyson, M.M. Dillon |
| | | Mr. I. Williams, M.M. Dillon |
| FROM | : | J. Horton |
| SUBJECT: | : | Highway 6 New - Hamilton to Caledonia Route Location and Preliminary Design Study |
| DATE | : | October 22, 1985 |
| FILE | : | 9576-01/13 |

Second Series of Public Information Centres - Marritt Hall, Ancaster

The second series of public information centres for this project were held on the 17th and 18th of October 1985. This memo details the comments made by members of the public at the information centre held on 18th October, 1985 at the Marritt Hall in Ancaster, Ontario.

Attendance at the information centre was approximately 100. This is based on the sign-in sheet provided, and the study team's opinion of the number of people who may not have signed in.

The information centre was set up in the gymnasium of the Seneca Unity School. The following summarizes the exhibits and the centre organization:

1. sign-in sheets at the entrance way.
2. tables with comment forms, pens, pencils and a box for the comment forms.
3. a 1:50000 plan showing the study area from Lake Erie to Lake Ontario with the abandoned east and central corridors, and the west corridor now under study.
4. comparison table of the corridors to transportation objectives.
5. a display showing the transportation objectives.
6. a 1:5000 aerial mosaic of the study area showing the abandoned alternatives, the feasible alternatives and the technically recommended alignment.
7. 1:2000 plan showing the technically recommended alignment in detail. These plans indicated all property ownership adjacent to the recommended route.
8. a display showing the proposed cross-sections for Highway 6 (New).
9. a display showing the future schedule and parties to contact for additional information.
10. a display showing the general steps in the environmental assessment process.
11. a sketch of the crossing of Unity Road.
12. a display showing the expressed concerns and proposed mitigation of the impacts at the Unity Road Hamlet area.
13. detailed assessment of alternatives a, b, and c in tabular form.
14. detailed assessment of alternatives 1, 2, 3 and 4 in tabular form.

The study members in attendance at all times were:

| | |
|------------------|-------------|
| Mr. P. Shaver, | MTC |
| Mr. B. Ogden, | MTC |
| Mr. J. Nuttall, | MTC |
| Mr. R. Bigger, | MTC |
| Ms. J. Tennyson, | M.M. Dillon |
| Mr. I. Williams, | M.M. Dillon |
| Mr. J. Horton, | M.M. Dillon |

In addition, Mr. M. Cohen, from Transport Canada was in attendance throughout to answer any questions relating to the Mount Hope airport.

Comment sheets were made available for members of the public to complete. In addition, study team members completed comment sheets during discussions with some members of the public.

A special questionnaire was made available to farmers in the area. This questionnaire was directed at establishing specific impacts on farming operations from the recommended alignment.

Immediately following the information centres, letters were sent to all members of the public who had completed comment forms responding to their concerns.

The following details comments made by members of the public during the information centre.

| | | | |
|--|---|---|--|
| Mr. G. Benedict R.R. #2 Mount Hope, Ontario | Believes the Caledonia By-pass is not needed and traffic should not be encouraged to travel into Hamilton through Ryckman's Corner. White Church Road should not be realigned and cul-de-saced as it affects his farm operations. Would like a photo mosaic of the study area around White Church Road. | Mr. & Mrs. G.A. Chapman 354 East Side Court Burlington, Ontario | Study team members very pleasant and helpful. |
| E. Black 5 Sanders Blvd. Hamilton, Ontario L8S 3H7 | Requested information on the timing of the purchase of property on Highway 53 under the MTC designation. E. Black is secretary of Freeland Development Limited. | Ancaster Councillor Ms. Laverda Donovan 211 Butter Road East R.R. #2 Ancaster, Ontario L9G 3L1 | Keep ramps at Highway 53 and 403 good idea. Requested a print of the recommended alignment and a detailed map of the study area. |
| Mr. J. G. Bonenfant 298 Highway 53 East Ancaster, Ontario L9G 3K9 | Would appreciate a 1 to 2,000 plan of the Highway 53 area. | Mr. A. Ernest 303 Wilson Street East Ancaster, Ontario | Recommended additional information on rationale and need for the highway facility. Requested information on all options considered as alternatives to the existing route and information on preliminary screening process to narrow options to the considered alternatives. Particularly interested in information on environmental impacts on all natural areas in the study area (not just designated ESA's). He is particularly interested in potential impacts on forests, streams, and ungulates. |
| Mr. R. A. Brown 378 Highway 53 East Ancaster, Ontario L9G 3K9 | Believes his lands will be designated for the highway and should be purchased as soon as possible. Property has been in the family since United Empire Loyalists. | | |
| Ms. E. Catherwood 8 Bethany Court Hamilton, Ontario L9C 7A4 | Agrees with the recommended alignment as it avoids the animal cemetery. | Mr. D. Fairfax 91 Strathearne Place Mount Hope, Ontario | Questioned the need for government spending on a new highway facility. |

| | | | |
|--|---|--|--|
| Mr. C. Houwer R.R. #3 Mount Hope, Ontario | Believes the recommended alignment is excellent as it does not break up family farms. | Ms. Jean Morwick 699 Sunnyridge Road Ancaster, Ontario | Believes too much farm land will be required for Highway 6 New. Questions spending priorities for Highway 6 New. Believes there are sufficient roads in the area. |
| Mr. L. Jerome Highway 53 Ancaster, Ontario L9G 2J8 | Requested 1:2000 plan of the recommended alignment at Book Road and a copy of environmental assessment process display. | Mr. W. Murray 112 Alderson Drive Hamilton, Ontario L9B 1G5 | Has an animal in the Book Road Pet Cemetery and lives within about 5 miles of the airport. Would like to be kept up to date on the progress of the study. |
| Mr. St. Clair Jerome 44 Highway 53 Ancaster Ontario L9G 2J8 | Requested a 1:2000 plan of recommended alignment at Book Road and a copy of display showing environmental assessment process. | Ms. J. Penny 476 Book Road East Ancaster, Ontario | Opposed to interchange and access on Book Road. |
| Mr. J. W. Little 9210 White Church Road West R.R. #2 Mount Hope, Ontario | Believes #4 is the best route, if any. Believes the farm operations along #4 are not as viable as those along #1. His house on White Church Road is required for alignment #1 and believes that he should be compensated immediately for the property based on hardship. Requested that his property be shown on the next set of displays. Also offered additional information on the waterfowl area, on the adjacent woodlot, and on flooding in the area. | Mr. W. Petrie 282 Book Road East Ancaster, Ontario | House is removed by the recommended route. Requested a 1:2000 plan of Book Road area. |
| Mr. T. McCartney 150 Hatton Drive Ancaster, Ontario | Requested noise barriers north of Highway 403, west of the east-to-south ramps. Believes the crossing of Highway 6 (New) over Highway 403 will increase noise levels in the area. | Mr. K. Reed 328 Highway 53 East Ancaster, Ontario | Concerned with the drainage plans for the new highway as he is located immediately west of Highway 6 New, south of Highway 53. Believes the MTC should purchase his property because of proximity effects, specifically visual and noise ones. |
| | | Mr. & Mrs. J. Roberts 370 Highway 53 East Ancaster, Ontario L9G 3K9 | Believes that if Mr. Reed wishes to sell his property, highway should be shifted to the west away from their property. |
| | | | The proposed plan leaves residents in an undesirable elevation as their property will have to bear all road noise from the new proposed highway. This property has been in the family for seven generations. |

Mrs. W. Shaver
46 Terrace Drive
Hamilton, Ontario
L9A 2Y6

Wishes to be included in future pet cemetery correspondence. Requested letter sent to other pet cemetery plot owners in October 1985.

Mr. C. Shepard
Box 27
R.R. #2
Mount Hope, Ontario
L0R 1W0

Expressed concern over the realignment of White Church Road with respect to the noise level and view experienced by the properties adjacent to the new highway. Requested a tree line be planted along the boundaries of the interchange adjacent to existing Highway 6. Such a tree line would provide a visual and acoustic barrier.

Requested a minor shift in the alignment of White Church Road to avoid the need for property from Mr. Wilton Benedict.

Mrs. G. Shepard
Box 27
R.R. #2
Mount Hope, Ontario
L0R 1W0

Requested 1:2000 plans of the White Church Road area.

Mr. C. D. Smith
R.R. #2
Ancaster, Ontario
L9G 3L1

Highway 6 (New) will require ten metres more or less of property on lot 44. This will result in cost and inconvenience to farm machinery movement. Requested detailed plan of the Butter Road area. Requires use of Book Road to get to his operation on Butter Road.

M.M. Dillon Limited
Toronto, Ontario
22 October, 1985
9576-01/13

**Records of presentations to
Municipal Elected Representatives**

October 7, 15 and 29, 1985

MEMO TO: File

CC: P. Shaver
J. Nuttall
F. Leech
B. Ogden
J. Tennyson
I. Williams

FROM: J. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE NO: 9576-01/13

DATE: 8 October 1985

PRESENTATION TO THE TOWNSHIP OF GLANBROOK COUNCIL

A presentation prior to the second series of Public Information Centres was made to the Township of Glanbrook Council Meeting of 7 October 1985.

The Study Team members in attendance were:

| | | |
|---|----------------|---------------------------|
| . | Mr. P. Shaver | MTC - Planning and Design |
| . | Mr. J. Nuttall | MTC - Environmental Unit |
| . | Mr. J. Horton | M. M. Dillon Limited |

1. GENERAL

The display boards to be used at the upcoming second series of Public Information Centres were arranged in the hall adjacent to the Council Chambers. Council adjourned their meeting in the Council Chambers and viewed the displays and asked various questions. The displays included:

1. 1:5000 aerial mosaic showing the alternative alignments, the abandoned alignments and the technically recommended alignment.
2. The 1:2000 plans of the recommended alignment.

The discussion was quite amicable and no objections were raised regarding the recommended alignment.

Mr. Shaver gave a brief introduction explaining that the Study Team had been before Council in June of this year and had held two Public Information Centres in June, received comments from the public, published a report outlining these comments and those made by Council and proceeded with the detailed evaluation of the alternatives. The purpose of this evening's meeting was to present the recommended alignment and to receive their comments and answer questions.

Appendix D

Following the introduction, Mr. Horton briefly presented the recommended alignment using the 1:5000 mosaics.

2. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council, and the answers given.

Q: Why are there no ramps serving movements to and from the west on Highway 403 from Highway 53?

A: The Traffic Analysis undertaken for this project indicated the major traffic movement was to and from the east on Highway 403 from Highway 53, i.e. to and from Hamilton. In addition, the movement to and from the west can be accommodated by travelling westerly along Highway 53 and joining Highway 403 at Duff's Corners. This routing along Highway 53 west does not require any out-of-way travel.

Q: Why is there an interchange proposed at Book Road?

A: The interchange is primarily to serve Transport Canada's long range plans for a terminal on the north side of the runway. This would require a realignment of Dickenson Road through to Book Road.

Q: Has there been consideration of the impacts of the extension of Dickenson Road through to Book Road?

A: No detailed assessment has been undertaken at this time, however, from a review of the aerial mosaic, the connection does look feasible. This connection is viewed as a Regional undertaking and the Region is aware of Transport Canada's plans for the terminal and the proposed interchange at Book Road.

Q: How is the connection made from existing Highway 6 to White Church Road?

A: White Church Road would be realigned to the north and east connecting to Highway 6 (existing) near Homestead Drive. The by-passed portion of Highway 6 would swing to the north and west and "Tee" into White Church Road.

This alignment favours the major traffic movement from Highway 6 (New) to existing Highway 6 into Hamilton.

Q: How will truck traffic, east-west, along White Church Road be accommodated?

A: Traffic along White Church Road will be required to make an additional turn from White Church onto a short section of existing Highway 6 and then back to White Church Road. The traffic analysis undertaken to date indicates that the

traffic moving north-south is greater than that moving east-west, thus the realignment of White Church Road was designed to accommodate the north-south movement. One additional turning movement will be required for east-west traffic along White Church Road. During preliminary design, additional investigations will be undertaken with regards to accommodating turning movements at the proposed intersections.

Q: In the 1974 Study a route was identified immediately west of Glanaster Road. Why is this route not shown on the display boards?

A: Alignments similar to this were considered for Highway 6 (New) and are shown as the abandoned alternatives. These alignments were abandoned primarily because of their distance from Highway 6 (existing). The significant north-south traffic movement, identified earlier in the discussion, was a driving force in locating Highway 6 (New) as close to Highway 6 as possible.

In addition, the Ontario Ministry of Agriculture and Food identified that the further west alternatives, i.e. alignment # 4 and the two abandoned alternatives would have severe impacts on agricultural lands.

Q: How will Highway 6 (New) be staged?

A: Construction will begin at the north end at Highway 403 and proceed southerly in a fairly continuous manner. The facility will most likely begin as a two or four-lane arterial roadway with at-grade intersections at future interchange locations with all other roadways being grade separated.

Q: Will Highway 6 (New) be open for use as each stage is completed or will the whole route be opened once it is finished?

A: As each major construction stage is completed, it will be open for traffic. A logical first stage would be from Highway 403 southerly to Butter Road.

Q: When will Highway 6 (New) be constructed?

A: There will be no construction within the next five years.

Q: Five years is too long to wait for improved airport access. Why can't the facility be built sooner?

A: The completion of the preliminary design will take until the Fall of 1986. Following this, Ministry of the Environment approval will require 6 to 12 months and even longer with the possibility of a hearing. Then after the Environmental approvals are obtained, there will be approximately two years of final design.

- Q: Can final design be undertaken prior to Ministry of the Environment approval?
- A: No. The Environmental approvals may require changes in the preliminary design, which must be incorporated in the final design.
- Q: Can the project be approved in segments, i.e. from Highway 403 to Butter Road to allow for improved access?
- A: No. The Ministry of the Environment does not allow a project to be segmented. The approval process is for the entire facility in its ultimate configuration.
- Q: After the final design is completed, how soon will the facility be built?
- A: The timing then depends upon competing priorities within the province.
- Q: Who decides on these priorities?
- A: The Minister of Transportation and Communications in consultation with his advisors.

Following the question period, Mr. Shaver concluded the presentation by informing the Council that the next step was to proceed to the Public Information Centres on 17 and 18 of October 1985. Brochures were provided to all council members and all those in attendance, as well as several copies provided to the clerk for display at the Township offices. Follow the Public Information Centres, preliminary design will be undertaken during the Fall and Spring with a third series of Public Information Centres in the Spring of 1986. At this time, there will be another presentation to Council. This time seeking a Council resolution.

The Council members thanked the Study Team for their presentation and proceeded back to the Council Chambers for their meeting.

MEMO TO: File 9576-01/15

CC: P. Shaver
J. Nuttall
F. Leech
B. Ogden
J. Tennyson
I. Williams

FROM: J. P. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

DATE: 15 October 1985

PRESENTATION TO THE REGIONAL MUNICIPALITY OF HALDIMAND-NORFOLK

On 15 October 1985, a presentation was made to the Regional Municipality of Haldimand- Norfolk Engineering Committee prior to the second series of Public Information Centres.

The Study Team members in attendance were:

- . Mr. P. Shaver - MTC, Planning and Design
- . Mr. J. Nuttall - MTC, Environmental Unit
- . Mr. J. Horton - M. M. Dillon Limited

1. GENERAL

The display boards to be used at the upcoming second series of Public Information Centres were presented to the Committee. Displays included:

- 1) 1:5000 aerial mosaic showing the alternative alignments, the abandoned alignments and the technically recommended alignment.
- 2) The 1:2000 plans of the recommended alignment.

The 1:5000 display boards were mounted outside of the Committee Room and the Committee adjourned the meeting and reviewed the display boards.

The meeting was very amicable with no objections voiced with regards to the recommended alignment.

Brochures had been sent to the clerk and had been distributed to Council members prior to the meeting.

Mr. Shaver made a short introduction and then Mr. Horton briefly presented the recommended alignment using the 1:5000 mosaics.

2. QUESTIONS AND ANSWERS

The following summarizes the questions raised by the Committee members and answers given.

Q: Will a section of Highway 6 between Green's Road and existing Highway 6 remain as a provincial freeway once Highway 6 (New) is constructed?

A: No. It is expected that this section of Highway 6 will revert to the Town or the Region. In addition, existing Highway 6 from Green's Road to Townline Road is expected to be assumed by the Town or the Region upon the completion of Highway 6 (New).

The issue of the Region assuming portions of existing Highway 6 will be negotiated at a later date. However, the Ministry expects the issue of transfers to the Region to be part of the Council resolution expected in the Spring of 1986.

Q: How many lanes will be built initially?

A: In all likelihood the facility will be constructed as a two or four-lane facility. The staging will begin at the north end at Highway 403 and proceed southerly in a fairly continuous manner.

Q: Will the Region be expected to assume existing Highway 6 if only a two-lane facility is built for Highway 6 (New)?

A: Yes. The Ministry would expect the Region to assume Highway 6 existing, once either a two or four-lane Highway 6 (New) is constructed.

Q: Would two lanes be suitable given the large volumes of trucks expected from the Nanticoke area?

A: A two-lane facility was judged to be acceptable given the forecasted traffic volumes for some period of time. In addition, Highway 6 (New) will initially be grade-separated at all locations except for future interchanges. Also, Highway 6 (New) will have complete access control. Therefore there will be very little interference with movements of truck volumes.

The analysis of truck traffic conducted in the Fall of 1985 indicated that the major concern of the trucking industry was poor access to the provincial freeway network. Even with a two-lane Highway 6 (New) there would be a direct connection to Highway 403.

Q: What is involved in the Environmental Assessment Process for Highway 6 (New)?

A: A formal Environmental Assessment Report will be submitted to MOE next year. Approvals are expected in late 1987 if there are no hearings.

Q: Will Highway 6 (New) be built to accommodate widening to four or six-lanes?

A: Yes. The highway is being designed for an ultimate six-lane freeway facility within an 80m right-of-way. Any structures built will be designed to accommodate the ultimate number of lanes.

Q: Would it be possible to get an exemption from the Environmental Process to speed up the construction of Highway 6 (New)?

A: There are no plans to apply for an exemption at this time. This is a long-term Route Location and Preliminary Design Study to protect the corridor. It would be very difficult to obtain an exemption for such a project.

Q: When could construction begin?

A: The earliest construction could begin is approximately five years. Once construction begins, a year or two would be required for the construction of any structures. Therefore traffic movement on Highway 6 (New) could not be expected until after the year 1990 at the earliest.

Q: What were the comments most often received at the first series of Public Information Centres?

A: A report was sent to the Region and it is on file. This was confirmed by Mr. Davies. However, in summary, the major issues consisted of the following:

- 1) Property impacts to individual homeowners.
- 2) The loss of farmland and effects to farm operations, i.e. severances.
- 3) The effects of noise, given the quiet nature of the area.

4) Of importance to the Haldimand-Norfolk region is the Unity Road Hamlet. Three of the four alternative alignments go through the Unity Road Hamlet. A great deal of consideration was given to the effects of a highway through the hamlet and studies were undertaken, taking into consideration noise, visual intrusion, safety, travel patterns, driveway access, changes in traffic volumes, number of residences required, effects to residential holdings and effects to future residential development.

Q: Did the public question the need for the new facility?

A: There was some concern expressed by the public, given that there is little traffic congestion in the area. To these individuals it was explained that the highway was being constructed primarily to serve the airport and to facilitate economic development in the Townsend-Nanticoke area.

There were no further questions.

Mr. Shaver concluded the meeting by thanking the Council members for their time and stating that the Study Team was now to proceed to Public Information Centres on 17 and 18 October 1985, and following this would take into consideration comments received from councils, public and municipal staff members and proceed with preliminary design during the Winter. Another series of presentations will be made in the Spring of 1986 and formal Council resolutions would be requested at that time.

JPH:gjo

MEMO TO: File 9576-01/15

CC: P. Shaver
J. Nuttall
F. Leech
B. Ogden
J. Tennyson
I. Williams

FROM: J. P. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

DATE: 15 October 1985

PRESENTATION TO THE TOWN OF HALDIMAND

On 15 October 1985, a presentation was made to the Town of Haldimand Council prior to the second series of Public Information Centres on the evening of 15 October 1985.

The Study Team members in attendance were:

| | |
|------------------|----------------------------|
| . Mr. P. Shaver | - MTC, Planning and Design |
| . Mr. J. Nuttall | - MTC, Environmental Unit |
| . Mr. J. Horton | - M. M. Dillon Limited |

1. GENERAL

The display boards to be used at the upcoming second series of Public Information Centres were presented to the Council. Displays included:

- 1) 1:5000 aerial mosaic showing the alternative alignments, the abandoned alignments and the technically recommended alignment.
- 2) The 1:2000 plans of the recommended alignment.

The 1:5000 display boards were mounted outside of the Council chambers and the Council adjourned the meeting and reviewed the display boards.

The meeting was very amicable with no objections voiced with regards to the recommended alignment.

Brochures had been sent to the clerk and had been distributed to Council members prior to the meeting. Additional brochures were left on the counter for distribution to any interested parties.

Mr. Shaver made a short introduction and then Mr. Horton briefly presented the recommended alignment using the 1:5000 mosaics.

2. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council and the answers given.

Q: Why is there no interchange between the Caledonia Bypass and Highway 54?

A: There is not a significant traffic movement between the Caledonia Bypass and Highway 54. In addition, it is expected that Highway 54 will be removed from the provincial system. However, if Highway 54 remains within the provincial system and warrants an interchange, this can be re-evaluated at a later stage.

However, the Study Area for Highway 6 (New) does not extend this far south and this is a separate issue from the Highway 6 (New) Study.

Q: Will there be an interchange at the south end of the Caledonia Bypass?

A: In the ultimate stage there will be an interchange at the south end of the Caledonia Bypass. Improvements now being made to the south end of the bypass are for the interim only. Ultimately, Highway 6 (New) will extend from Lake Erie to Highway 403.

Q: What will become of old Highway 6?

A: The Ministry will negotiate with the Region for transfer of jurisdiction once Highway 6 (New) is constructed.

Q: When will Highway 6 (New) be built?

A: Nothing can be built within the next five years as this is the time required for the approval process. Beyond that, it must compete with other facilities within the province for funding.

Q: Will White Church Road be upgraded?

A: White Church Road will be made four lanes from Highway 6 (New) to existing Highway 6. White Church Road will be realigned as it would not be possible to widen, without severe impacts, on its current alignment.

Q: Does Highway 6 (New) cross Unity Road between the Church and School?

A: Yes. The alignment for Highway 6 (New) goes below Unity Road in a deep cut, (approximately 7 to 8 metres) and requires the removal of one house on the south side of Unity Road. Some property may be required from the school, but no property is required from the Church.

The deep cut at Unity Road reduces the impacts of the highway with respect to noise and visual intrusion. There will be a fence along the highway so the children in the schoolyard will be protected. The profile of Unity Road will be the same and thus the travel patterns and driveway access within the area will not be changed.

Q: Will there be an interchange for Highway 6 (New) at Highway 403?

A: Yes. The new interchange will be between Mohawk Road and the Fiddler's Green interchange.

Q: Are roads crossing Highway 6 (New) being grade-separated?

A: All roadways, except those at future interchange locations will be grade-separated in both the initial and ultimate stage. At locations of future interchanges, the initial stage may have at-grade intersections.

Q: What is the staging of Highway 6 (New)?

A: Highway 6 (New) will probably be built initially as a two or four-lane arterial with at-grade intersections at future interchange locations only. Construction will begin at the north and proceed in a fairly continuous manner southward to the Caledonia Bypass.

Q: Why is Alignment No. 1 so close to existing Highway 6?

A: There is a significant traffic movement from the area to the south of Caledonia which wishes to transfer back to existing Highway 6 to go to the Hamilton area. Highway 6 (New) is close to existing Highway 6 in this area to favour this traffic movement. This is also why there is an interchange at White Church Road and the realignment of White Church Road.

Q: Why is there an interchange at Book Road?

A: An interchange is being protected at Book Road primarily to provide service for Transport Canada's ultimate requirements for a terminal on the north side of the airport.

Q: What would happen, if after the Public Information Centres, that another alignment, say No. 3, were selected?

A: If there were this major a shift in the recommended alignment, there would be another series of Public Information Centres at this level of detail, to review that recommendation.

Q: Would traffic stay on existing Highway 6 if it were going to Hamilton?

A: We would expect that traffic from the area south of Caledonia will travel on the existing bypass then along Highway 6 (New) to White Church Road. With an interchange at White Church Road and the realignment of White Church Road to existing Highway 6, it should make the travel time less on Highway 6 (New) than existing Highway 6. Thus, most people would be expected to use Highway 6 (New).

Following the questions, Mr. Shaver outlined the future course of action for the Study. Public Information Centres will be held on 17 and 18 October 1985. Following the Information Centres, a report will be generated similar to the one after the first series of Public Information Centres, outlining the response from councils and the public. During the Winter and Spring of 1986, preliminary design will be undertaken. In the Spring of 1986, a third series of Public Information Centres will be held and Council resolutions will be sought.

JPH:gjo

MEMO TO: File
CC: P. Shaver
J. Nuttall
F. Leech
B. Ogden
J. Tennyson
I. Williams
FROM: J. Horton
SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study
FILE NO: 9576-01/13
DATE: 8 October 1985

PRESENTATION TO THE TOWN OF ANCASTER

A presentation prior to the second series of Public Information Centres was made to the Town of Ancaster Council Meeting on the evening of 7 October 1985.

The Study Team members in attendance were:

| | |
|-----------------|---------------------------|
| • Mr. P. Shaver | MTC - Planning and Design |
| • Mr. B. Ogden | MTC - Environmental Unit |
| • Mr. J. Horton | M. M. Dillon Limited |

1. GENERAL

The display boards to be used at the upcoming second series of Public Information Centres were presented to the Council. The displays included:

- 1:5000 aerial mosaic showing the alternative alignments, the abandoned alignments and the technically recommended alignment.
- 1:2000 plans of the recommended alignment.

The 1:5000 display boards were mounted outside of the Council Chambers and the Council adjourned the meeting and reviewed the display boards with some members of the public.

Brochures were provided to all Council members and members of the public. Additional brochures were left on the counter for distribution to any interested parties.

Mr. Shaver made a short introduction and Mr. Horton briefly presented the recommended alignment as shown on the 1:5000 mosaics.

2. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council and the answers given.

Q: Why is there an interchange at Book Road?

A: An interchange is being protected to serve the long-term requirements of Transport Canada for a terminal on the north side of the expanded airport.

Q: Why is there no full interchange at Highway 53?

A: Ramps are being provided from Highway 53 to and from the east on Highway 403. The Traffic Analysis undertaken as part of the Study indicated this was the major traffic movement, i.e. to and from the east to Hamilton. The other movement, to and from the west on Highway 403, can be accommodated by travelling westerly on Highway 53 to Duff's Corners. This routing along Highway 53 does not involve any out-of-way travel.

In addition, it was pointed out that the land along Highway 53 near the designation contained several existing residences. Additional lands for an interchange would require the taking of several residences.

Also, the spacing between Highway 403 and Highway 53 is tight for an interchange. The distance is approximately .7 km. Although an interchange could be possible, it would require several structures and would have a high cost.

Q: Would a full interchange at Highway 53 offload the existing Fiddler's Green interchange, and in particular, Amberly Blvd?

A: The movements provided to and from the east from Highway 53 to Highway 403 are the same movements provided at the existing Fiddler's Green interchange. Thus, the proposed ramps will serve to offload the Fiddler's Green interchange as they serve exactly the same traffic movements. Ramps serving other directions would not offload the Fiddler's Green interchange as they do not serve the same movements.

Q: When will Highway 6 (New) be built?

A: Nothing will be constructed within the next five years due to the necessary approvals and design process. Beyond five years, Highway 6 (New) must compete with other priorities within the province.

Q: Did the Region rezone lands along Highway 6 for the Airport Industrial Park?

A: Yes, the Airport Industrial Park is shown on the aerial mosaic outlined in red. It is an area running along Highway 6 in the vicinity of Dickenson Road.

Following the questions, Mr. Shaver outlined the future course of action for the Study. The Public Information Centres will be held on 17 and 18 October 1985. Following the Information Centres, a report will be generated, similar to the one done after the first series of Information Centres, outlining the response from Council and the public. During the Winter and Spring of 1986, preliminary design will be undertaken. In the Spring of 1986, a third series of Public Information Centres will be held and Council Resolutions will be sought.

JPH:gjo

MEMO TO: File

CC: P. Shaver, J. Nuttall, J. Horton, J. Tennyson

FROM: I. Williams

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE NO: 9576-01/14

DATE: 31 October 1985

**PRESENTATION TO HAMILTON-WENTWORTH TRANSPORTATION SERVICES
COMMITTEE**

On 29 October 1985 this project was presented at a meeting of the Hamilton-Wentworth Regional Transportation Services Committee. Study Team members in attendance were:

P. Shaver - M.T.C.
J. Horton - Dillon
I. Williams - Dillon

Mr. H. Schweinbenz, the Regional Commissioner of Transportation, introduced our delegation, noting for the benefit of Committee Members that the purpose of the presentation was to ensure that they were aware of the status of the project. Mr. Schweinbenz also noted that as the project is being carried out under the Environmental Assessment Act, it is mandatory for the Study Team to ensure that all organizations are fully informed of the project.

The committee meeting was experiencing scheduling and timing problems and the committee felt that a presentation of the project could not be scheduled in, and was not necessary. Members of the committee had all previously received a detailed information package including a 1:10,000 mosaic showing the technically recommended alignment and the rejected alignments. Consequently, they noted they were very familiar with the project.

Generally, committee members voiced strong support for the project and the recommended alignment, and suggested that Highway 6 (New) should be built as quickly as possible.

APPENDIX E

**Property Owners Meeting
(White Church Road)**



Ministry of
Transportation and
Communications

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Results of the Property Owners Meeting (WHITE CHURCH ROAD AREA)

DILLON

February 1986

1. INTRODUCTION

A Property Owners Meeting was held for residents in the vicinity of White Church Road to review changes to the technically recommended alignment for Highway 6 (New). These changes were brought about by comments received from the Township of Glanbrook Council, local residents and Transport Canada.

Property owners west of Highway 6 between Glancaster Road and Chippewa Road, affected by the changes in the alignment and interchanges, were notified of the Property Owners Meeting by direct mailing. In addition, residents along the east side of Highway 6 from Homestead Drive to Chippewa Road were notified of the meeting by direct letter distribution.

A copy of the letter and the mailing address of those contacted are shown as Appendix 1.

2. CENTRE ORGANIZATION

The Property Owners Meeting was held on Wednesday, 12 February 1986 at the Glanford Community Hall, 3027 Homestead Drive, Mount Hope, Ontario.

The Centre was open from 5:00 to 8:00 p.m.

The following summarizes the exhibits used and the Centre Organization:

1. sign-in sheets at the entranceway;
2. tables with comment forms, pens, pencils and a box for the comment forms;
3. an exhibit stating the meeting's purpose;
4. a 1:5000 plan showing two rejected alternatives;
5. a 1:2000 plan showing the interchange configurations at White Church Road and Airport Road (previously presented at the November 1985 Public Information Centres);
6. a 1:2000 plan showing the current proposed interchange connections to Highway 6 and Airport Road;

This was labelled "Technically Recommended Alignment".
7. comparison tables showing the four alternatives considered and the factors and criteria used in the evaluation.

Copy of the text displays used at the Property Owners Meeting are shown in Appendix 2.

Comment sheets were made available for members of the public to note their comments. People were invited to either mail the sheets in or leave them at the centre. Some sheets were also filled out by the Study Team during discussions with members of the public.

Members of the MTC project staff and consulting staff were in attendance at all times.

It was estimated there were approximately 50 persons at the Property Owners Meeting.

Copies of the memo summarizing the comments made by members of the public is included as Appendix 3.

3. CONTACT WITH ELECTED REPRESENTATIVES

Following the Property Owners Meeting a presentation was made to the Township of Glanbrook Council on Monday, 17 February 1986.

The purpose of the meeting was to allow the elected representatives to provide comments on the changes to the technically recommended alignment and to inform them of the response received from the public at the Property Owners Meeting held on 12 February 1986. A copy of the memo summarizing the presentation to the Township of Glanbrook Council and the questions asked and answers given is included in Appendix 4.

A presentation was made at the request of the Planning Committee on 24 February 1986. A copy of the memo summarizing the presentation is included in Appendix 4.

4. MAJOR ISSUES

Based on our analysis of comments received, the changes to the White Church Road and Airport Road interchanges were generally viewed favourably by the public and the Township Council.

Certain residents, especially those along White Church Road, felt the changes were an improvement over the previous scheme.

Some directly affected property owners were still concerned over the effects to their property, however, generally these owners were as equally affected with the previous proposal as with the current technically recommended alignment.

A few properties on the east side of Highway 6 in the vicinity of the realignment of Highway 6 into Highway 6 (New) expressed concern over loss of direct access to their commercial operations.

Property Owners contacted by direct mailing

28 January 1986

Following letter sent as per attached list.

Highway 6 (New)
Hamilton to Caledonia

Dear _____:

In view of comments received during our second series of Public Information Centres last November, we have made certain modifications to the Technically Recommended Alignment in the vicinity of White Church Road.

We are holding a special meeting for those directly affected, to present our latest plans and receive comments. Property owners in the immediate vicinity of White Church Road and concerned residents only, are being invited.

You are encouraged to attend this meeting to be held on Wednesday, 12 February 1986, at the Glanford Community Hall, 3027 Homestead Drive, Mount Hope, Ontario. The Hall will be open from 5:00 p.m. to 8:00 p.m.

Yours truly,

PS:gjo

P. Shaver, P. Eng.
Project Manager

Mr. and Mrs. G. Benedict
9349 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. M. Paletta
966 Garth Street
Hamilton, Ontario
L9C 4L0

Mr. A. Okimi
3622 Highway 6
P.O. Box 190
Mount Hope, Ontario
LOR 1W0

Mr. G. Palermo (In Trust)
161 Country Club Drive
Hamilton, Ontario
L8K 6A9

Mr. and Mrs. R. Pearce
9495 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. J. Valvasori
9157 White Church Road
Group C, Box 30
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Ms. I. Shaw
9147 White Church Road
Group C, Box 32
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. C. Lawrence
9141 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Ms. M. Calder
9133 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. G. Shepherd
9125 White Church Road
Box 27
Mount Hope, Ontario
LOR 1W0

Mr. F. Ollie
Box 208
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. J. Vanderpol
9105 White Church Road
Box 36
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. T. Pearce
9087 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. E. MacMilland
9075 White Church Road
Group C, Box 31
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Ms. G. Hutt
9065 White Church Road
Group C, Box 21
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Ms. K. Adams
9061 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. D. Drummond
9055 White Church Road
Group C, Box 40
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. S. Sestrie
152 Homeside Avenue
Stoney Creek, Ontario
L8G 1W0

Mr. C. Aiken
9047 White Church Road
Group C, Box 34
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. J. Jones
9043 White Church Road
Group C, Box 22
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. D. Beamsley
9037 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. N. Markue
9033 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. D. Hinkley
Group C, Box 39
R.R. # 2
9027 White Church Road
Mount Hope, Ontario
LOR 1W0

Mr. E. Whaley
9705 Airport Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. G. Isbister
9630 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Ms. H. Pearce
9490 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. W. Jerome
9555 Airport Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. W. Benedict
9370 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. L. Hotz (In Trust)
166 Ferguson Avenue
Hamilton, Ontario
L8L 4Y4

Ciamco Developments Limited
c/o The Hillcrest
510 Concession Street
Hamilton, Ontario
L9A 1C4

Mr. and Mrs. L. McArthur
9122 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. V. DeGelder
R.R. # 2
Caledonia, Ontario
NOA 1A0

Mr. R. Killman
9727 White Church Road West
Mount Hope, Ontario
LOR 1W0

Mr. and Mrs. J. Little
9210 White Church Road
R.R. # 2
Mount Hope, Ontario
LOR 1W0

Mr. W. Woodley
R.R. # 2
Caledonia, Ontario
NOA 1A0

Roman Catholic Episcopal
Corporation of the Diocese
of Hamilton
700 King Street West
Hamilton, Ontario
L8P 1C7

Displays used at the Property Owners Meeting

**COMPARISON OF WHITE CHURCH ROAD AND
AIRPORT ROAD INTERCHANGE ALTERNATIVES
CHIPPANNA ROAD TO GLANCASTER ROAD**

| Property | Rejected Interchange Concepts | | | Initial White Church Road and Airport Road Interchanges | Revised Connections to Highway 6 and Airport Road |
|--|-----------------------------------|---|--|---|---|
| | Scheme 1 | Scheme 2 | | | |
| <u>Agriculture</u> | | | | | |
| Area of Class 1 and 2 lands removed (by Class) | | | | | |
| - 1 | 48 | 48 | | 48 | 48 |
| - 2 | 2 | 2 | | 2 | 2 |
| - Total | 50 | 50 | | 50 | 50 |
| Number of farmsteads removed | | | | | |
| Number of farmsteads retained | 12 | 13 | | 13 | 12 |
| Number of farm severances | 5 | 3 | | 3 | 5 |
| Area of landlocked parcels | 3 | 1 | | 1 | 3 |
| Area of landlocked parcels | 20 ha | 16 ha | | 16 ha | 21 ha |
| <u>Heritage</u> | | | | | |
| Number of heritage features affected (by type) | | | | | |
| - direct | None | None | | None | None |
| - indirect | Farmstead (76) on Airport Road | Farmstead (76) on Airport Road & Cemetery (74) on White Church Road | | Farmstead (76) on Airport Road & Cemetery (74) on White Church Road | Farmstead (76) on Airport Road |

PAGE 2

| | Rejected Interchange Concepts | | | Initial White Church Road and Airport Road Interchanges | Revised Connections to Highway 6 and Airport Road |
|---|---|--|--|--|---|
| | Scheme 1 | Scheme 2 | | | |
| <u>Community</u> | | | | | |
| Effects on Mount Hope and White Church Road Development | | | | | |
| Some disruption to White Church Road residents, some increase in traffic on Airport Road and in Mount Hope | Some disruption to perceived negative impacts to White Church Road residents | Some disruption and perceived negative impacts to White Church Road residents | | Some disruption and perceived negative impacts to White Church Road residents | Some disruption to White Church Road residents |
| <u>Noise</u> | | | | | |
| Number of residences experiencing an L _{eq} (24) of at least: | 6 - 50 DbA 4 - 55 DbA | 6 4 | | 6 4 | 6 4 |
| <u>Natural Environment</u> | | | | | |
| Area of all forests, plantations and other woodlots affected | 6 | 5 | | 5 | 6 |
| Area of highest quality and maturing representative woodlots affected | 6 | 5 | | 5 | 6 |
| Area of Woodland Improvement Act areas affected | 0 | 0 | | 0 | 0 |
| Area of Identified Waterfowl Area affected | 9 | 6 | | 6 | 11 |
| Number of stream crossings: | | | | | |
| - primary | 1 | 1 | | 1 | 1 |
| - secondary | 0 | 0 | | 0 | 0 |

| Rejected Interchange Concepts | Scheme 1 | | Scheme 2 | Initial White Church Road and Airport Road Interchanges | Revised Connections to Highway 6 and Airport Road |
|-------------------------------|--|---|---|--|--|
| | Scheme 1 | Scheme 2 | | | |
| <u>Planning Policies</u> | | | | | |
| Effects on future land use | Preserves open space and eventual link between Mount Hope and White Church Road settlement | Precludes future expansion of residential area of Mount Hope to include White Church Road settlement | Precludes future expansion of residential area of Mount Hope to include White Church Road settlement | Precludes future expansion of residential area of Mount Hope to include White Church Road settlement | Preserves open space and eventual link between Mount Hope and White Church Road settlement |
| <u>Traffic Service</u> | Movement to/from existing May 6 served directly by ramps south of White Church Road. Ramps serve local traffic to/from the south | Movement to/from existing May 6 indirectly via White Church Road. Ramps serve local traffic to/from the south | Movement to/from existing May 6 indirectly via White Church Road. Ramps serve local traffic to/from May 6 (new) for local traffic | Serves movement to/from existing May 6 indirectly via White Church Road. Ramps serve local traffic to/from May 6 (new) for local traffic | Movement to/from existing May 6 served by ramps south of White Church Road. Local traffic also served by ramps to/from the north |
| | Local traffic to/from the north on May 6 (new) must pass through Mount Road interchange | Restricts f-w travel on White Church Road | Restricts f-w travel on White Church Road | Restricts f-w travel on White Church Road | |

Meeting Purpose

The purpose of this Property Owners Meeting is to present and receive comments on changes to both the White Church Road and Airport Road Interchanges in response to concerns raised by the Township of Glanbrook Council and local area residents.

Public Comments, Property Owners Meeting,
Glanford Hall

12 February 1986

MEMO TO: File
FROM: J. P. Horton
SUBJECT: Highway 6 (New)
Hamilton to Caledonia
Route Location and Preliminary Design Study
FILE NO: 9576-01/13
DATE: 14 February 1986

This memorandum details the comments made by members of the public at the Property Owners Meeting held on 12 February 1986 at the Glanford Community Hall, Mount Hope, Ontario.

Attendance at the Property Owners Meeting was estimated to be approximately 50 persons. This is based on the sign-in sheets provided and an estimate of the number of persons that did not sign in.

The following summarizes the exhibits and the centre organization:

1. sign-in sheets at the entranceway;
2. tables with comment forms, pens, pencils and a box for the comment forms;
3. an exhibit stating the meeting's purpose;
4. a 1:5000 plan showing two rejected alternatives;
5. a 1:2000 plan showing the rejected interchange configurations at White Church Road and Airport Road, previously presented at the November 1985 Public Information Centres;
6. a 1:2000 plan showing the current proposed interchange connections to Highway 6 and Airport Road;

This was labelled "Technically Recommended Alignment".

7. comparison tables showing the four alternatives considered and the factors and criteria used in the evaluation.

The Study Team members in attendance at all times were:

| | |
|-------------------|----------------|
| - Mr. P. Shaver | - MTC |
| - Mr. B. Ogden | - MTC |
| - Mr. J. Nuttall | - MTC |
| - Ms. J. Tennyson | - M. M. Dillon |
| - Mr. J. Horton | - M. M. Dillon |

Comment sheets were made available for members of the public to complete. In addition, Study Team members completed comment sheets during the discussion with some members of the public.

Immediately following the Information Centres, letters were sent to all members of the public who had completed comment forms responding to their concerns.

The following comments were made by members of the public during the Information Centre.

| NAME | COMMENTS |
|--|---|
| Mr. V. Agozzino 3727 Highway 6 Mount Hope, Ontario LOR 1W0 | Requested 1:2000 scale plan of the area. |
| Ms. E. Benedict R.R. # 2 Mount Hope, Ontario LOR 1W0 | Requested 1:2000 plan of the White Church Road area. |
| Mr. T. Campbell P.O. Box 58 Mount Hope, Ontario LOR 1W0 | The Campbells operate an electrical sign business at 3773 Highway # 6. They are dependent upon the passing traffic for a large part of their business. The planned cul-de-sac on a portion of existing Highway 6 would affect their business. Requested a plan of the White Church Road area and information on possible compensation for loss of business. |
| Mr. W. Jerome R.R. # 2 Mount Hope, Ontario LOR 1W0 | Requested a 1:2000 plan of the White Church Road area. |
| Mr. E. Marvin 3705 Highway 6 Mount Hope, Ontario LOR 1W0 | Requested to be advised of any changes in the route. |
| Mr. and Mrs. J. Foley and McCormack 3613 Highway 6 Mount Hope, Ontario LOR 1W0 | Believe recommended alignment should be rejected due to an increase in traffic volumes and noise levels. In addition, recommended alignment will restrict access to property on Highway 6. Believes that the plan will result in a loss of value to their property. |

| NAME | COMMENTS |
|--|---|
| Mr. & Mrs. L. McArthur 9122 White Church Road R.R. # 1 Mount Hope, Ontario LOR 1W0 | Commented that the recommended alignment will cause damage to their tile bed. |
| Mr. F. Ollie P.O. Box 208 Mount Hope, Ontario LOR 1W0 | Requested information on improvements to drinking water and other unspecified improvements to the area. |
| Mr. D. Rosart Box 37, Group C R.R. # 2 Mount Hope, Ontario LOR 1W0 | Wished to be added to the mailing list as they have recently bought the Lawrence property on White Church Road. Prefer the technically recommended alignment over that previously shown at the November 1985 Public Information Centres. |
| Mr. T. Ruzsa 863 Main Street East Hamilton, Ontario L8M 1M2 | Requested a 1:2000 plan of the area from Glanaster Road to Book Road. Also requested a profile of the alignment. |
| Mrs. H. Shepherd Box 27 R.R. # 2 Mount Hope, Ontario LOR 1W0 | Prefers the technically recommended alignment to that previously presented at the November 1985 Public Information Centre. Believes that if berms and trees are used this will help to decrease noise. |
| Mr. G. Shepherd Box 27 R.R. # 2 Mount Hope, Ontario LOR 1W0 | Believes the current technically recommended alignment is excellent as it minimizes environmental concerns and little total disruption to residents. Requested a 1:2000 plan of the White Church Road area. |
| Mr. D. Smith R.R. # 3 Mount Hope, Ontario LOR 1W0 | Prefers technically recommended alignment to that previously presented at the November 1985 Public Information Centres. |
| Mr. M. Whaley R.R. # 2 Mount Hope, Ontario LOR 1W0 | Supports the technically recommended alignment as more feasible because the interchange to Airport Road lines up with the airport entrance and prefers location of the White Church Road interchange south of White Church Road. Requested 1:2000 plan of the White Church Road area. |

Records of Presentations to
Township of Glanbrook elected representatives

MEMO TO: File
FROM: J. P. Horton
FILE NO: 9576-01/13
SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study
DATE: 19 February 1986

PRESENTATION TO THE TOWNSHIP OF GLANBROOK COUNCIL

A presentation was made to the Township of Glanbrook Council on 17 February 1986 to present the technically recommended alignment for Highway 6 (New) between Glancaster and Chippewa Road, showing the interchange connections to Airport Road and Highway 6 (Existing).

The Study Team Members in attendance were:

Mr. P. Shaver - MTC, Planning & Design
Mr. J. Nuttall - MTC, Environmental Unit
Mr. J. Horton - M. M. Dillon Limited

I. GENERAL

The display boards presented at the Property Owners Meeting on 12 February 1986 were arranged in the hall adjacent to the Council Chambers. The Council Meeting began with a presentation on the reasons for changes to the interchanges at Airport Road and Highway 6, followed by a question and answer period.

The displays included:

- 1) A 1:5000 aerial mosaic showing two rejected alternatives.
- 2) A 1:2000 plan showing the rejected interchange configuration at White Church Road and Airport Road. This proposal was previously presented at the October 1985 Public Information Centre.
- 3) A 1:2000 plan showing the current proposed interchange connections to Highway 6 and Airport Road;

This was labelled "Technically Recommended Alignment".

Mr. Shaver gave a brief introduction explaining that the technically recommended alignment had been modified to incorporate concerns raised by the Township of Glanbrook Council, Transport Canada and local area residents.

Following the introduction, Mr. Horton briefly presented the recommended alignment using the 1:2000 scale plans.

II. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council and the answers given:

Q: Did the Study Team examine the possibility of increasing the distance between old Highway 6 and Highway 6 (New)?

A: Yes. The Study Team did examine the possibility of shifting to Alignment No. 2. However, because of severe impacts to the Unity Road Hamlet area and the requirement for a good traffic connection between existing 6 and Highway 6 (New) it was felt that the main alignment for Highway 6 (New) should not be altered.

Q: Describe the trips to and from the connection between Highway 6 and Highway 6 (New).

A: All movements will be provided both northbound and southbound between Highway 6 (New) and Highway 6 (Existing). (These movements were shown during the presentation.)

Q: Would a section of old Highway 6 near its connection to Highway 6 (New) be closed?

A: Yes, there would be a small cul-de-sac created along existing Highway 6.

Q: If Alternative No. 4 has the lowest cost, why was it rejected?

A: Other factors beside cost were considered and cost was judged to be approximately equal, i.e. no significant difference for all four routes.

In addition, although Alignment No. 4 avoided the Unity Road Hamlet, there was severe agricultural impacts; in fact, this alignment was judged to be unacceptable by the Ministry of Agriculture and Food. Also, its distance from Highway 6 would not allow for good traffic service for the major traffic movement between Highway 6 (New) and Highway 6 (Existing).

Q: Did the Ministry of Agriculture and Food feel that the technically recommended alignment was the one with the best agricultural impacts?

A: Alignment No. 4 was identified as having the worst agricultural impacts, but the Ministry of Agriculture and Food did not say which was the best.

The Ministry of Agriculture and Food has been provided with the factors and criteria used in the evaluation process. They have agreed with our methodology.

Q: Does the Study Team feel that this route has the least agricultural impacts?

A: This alignment may not have the fewest agricultural impacts. In fact, Alignment No. 2 may be somewhat better. However, many other factors enter into the selection, for example, woodlots, waterfowl nesting areas, residences, etc.

Q: Did the Study Team look at the number of people affected, not just farm acreage?

A: Several factors were taken into consideration, including the number of residences taken and affected, the number of farmsteads removed and the number of farms affected.

Q: Is this an improvement as far as the Glanbrook community is concerned?

A: With the changes in the interchanges, we have responded to the concerns raised by the Council, local residents and Transport Canada. We have kept land open for future development between Mount Hope and White Church Road, and have kept White Church Road open for through east-west travel. We have improved access to the airport. Therefore, traffic service to the area is as good, or better than the previous proposal and we have lessened the proximity effects to the public along White Church Road. We have been able to accomplish this while still maintaining our objectives for Highway 6 (New).

Q: What will be the grade level of Highway 6 (New) in the White Church Road area?

A: We have tried to keep the profile depressed through this area as much as possible. This lowers the noise and visual impacts.

Q: Is the number of people affected available?

A: Along Alignment No. 1 from Chippewa to Glancaster Road, we will be affecting 12 farms and one residence.

Q: Will the Ministry of Transportation and Communications buy all the land from a farm affected?

A: Generally only the land needed for the right-of-way.

Q: What about land severed without access to public roads?

A: If there is no access to a public road it will be bought out and offered for sale to the adjacent owners.

Q: What about severances with access but with problems with the remaining access?

A: Out of way travel for these severed parcels is examined. The Ministry of Transportation and Communications would consider a buy-out where the proposal makes a farm operation unviable. Generally, MTC purchases portions that are a very small proportion of the overall farm.

Q: Have the individuals in the area been approached yet?

A: Yes, we held a Property Owners Meeting last Wednesday, and all owners in the area were contacted directly by mail.

Q: One of the Council requests was increased distance between Highway 6 (New) and Highway 6 (Existing) for future development. Was this considered?

A: Yes. However, due to other impacts, predominantly at the Unity Road Hamlet area and the waterfowl nesting area, a switch to Alignment No. 2 was not considered viable.

In addition, Alignment No. 2 increases the distance between Highway 6 (New) and Highway 6 (Existing), thus not offering the same level of traffic service for the major traffic movement between Highway 6 (New) and Highway 6 (Existing).

Q: I am the Building Inspector for the Township and have had two applications now for Building Permits in the general Study Area. Would it be possible to have a plan of the proposed alignment to review when development applications come forward?

A: Yes. (At this time, a 1:10,000 mosaic showing the technically recommended alignment and the alternative routes was provided).

There were no further questions and the Council moved to Council Chambers for the remaining portion of the meeting.

Mr. Shaver then recapped the changes to the technically recommended alignment, stating that the Study Team had attempted to respond to the concerns raised from the public, Council and Transport Canada. The changes had been presented to the public and generally comments were favourable. The next step in the study process is a final round of Public Information Centres to be held in the Spring of this year. Later in the year, the Environmental Assessment document will be submitted for formal approval.

There were additional questions from the Council as follows:

Q: Is the number of residential properties affected the same with this proposal as the previous one?

A: Yes.

Q: When will this be constructed?

A: Highway 6 (New) is currently not on the Ministry's program. Once designation is complete, the Highway 6 (New) project must compete for funds with all other projects within the province. The soonest it could be constructed is approximately five years, given the approval process.

Q: Once the lands are designated, what happens to these lands in the interim?

A: The Ministry of Transportation and Communications can only designate the lands with Ministry of Environment approval. Once this designation is in place, the Ministry has permit control over all lands within the right-of-way. The Ministry would not allow any new development or structures to be built. Existing land uses would remain until the time of construction.

Q: Previously you stated that the Ministry of Agriculture and Food considered Alignment No. 4 unacceptable. Who said this?

A: The process established as part of the study is to form an External Team. This external team is made up of all Government agencies and Ministries. A representative for the Ministry of Agriculture and Food is on the External Team. This representative is appointed by the Ministry of Agriculture and Food and not by the Ministry of Transportation and Communications.

We have met with the representative from the Ministry of Agriculture and Food two or three times and with the local agricultural representative at least two times.

In addition, the Study Team has examined the area with regards to agricultural resources to confirm the information provided by the External Team representative and the local farmers.

Information was also obtained by local farmers through a distribution of a questionnaire at the first and second series of Public Information Centres.

Q: What would happen if the Little's attempted to sell their property after the designation was laid down?

A: If the Little's could demonstrate that their selling of the property was frustrated by the designation, the Ministry has a procedure to deal with this. The Ministry examines each case separately and determines if hardship exists. If it does, the Ministry buys the property outright at fair market value.

At this point, the Mayor thanked the Study Team for their presentation and noted that there were two representatives from the community who wished to ask questions regarding Highway 6 (New). The questions and answers from the public are as follows:

Q: I am Mr. Jerome of Airport Road. Would I be able to build a barn on my property now?

A: Until a designation has been formally established, the Ministry of Transportation and Communications has no permit control within the area. You would be able to apply to the Municipality in the normal manner.

Q: I am Mr. Benedict on White Church Road and wish to state that I prefer Alignment No. 2, as I believe that the new highway is too close to the existing highway. I also believe that Alignment No. 1 lowers the land values and I may not be able to sell my property if I wish. I believe the proposal will make the area noisier and I wish that White Church Road remain open.

A: (No answer was required).

There were no further questions from the audience. At this point the Study Team left the meeting.

MEMO TO: File
FROM: J. F. Horton
SUBJECT: Highway 6 (New) - Hamilton to Caledonia
FILE NO: 9576-01/10
DATE: 26 February 1986

This memo will document a presentation to the Township of Glanbrook Planning Committee on 24 February 1986. Mr. Shaver and Mr. Horton attended the Planning Committee Meeting at the request of the Chairman to discuss the implications of the Township's request for a shift to Alignment No. 2.

Mr. Horton made a brief presentation outlining the impacts that would result from a shift to Alignment No. 2. Within the Glanbrook area these would include:

1. a full interchange at White Church Road;
2. a realignment of White Church Road through to Highway 6, precluding development south of Mount Hope;
3. closure of White Church Road to east-west travel;
4. a westerly shift in the airport interchange with no direct connection to the airport;
5. disruption to the waterfowl nesting area;
6. removal of the Benedict farmstead.

The overall impacts would also include:

1. division of the Unity Road Hamlet;
2. removal of two houses and one lot at Unity Road;
3. removal of several woodlots south of Unity Road;
4. slightly reduced agricultural impacts;
5. poorer traffic service.

In addition, the Council had requested that the Study Team examine lands for additional industrial development. Alignment No. 1 favours industrial development as it provides a good lot size between existing Highway 6 and Highway 6 (New). This lot depth is similar to that being proposed at the Airport Industrial Park. In addition Alignment No. 1 allows for future industrial lands to be provided on the other side of Highway 6 (New). Industries generally tend to favour development on either side of a highway rather than one side only. With Alignment No. 2 the lot sizes would be too deep for development on both sides.

Council had recently requested an interchange south of White Church Road to allow for East-West travel on White Church Road and to allow development to continue for Mount Hope southerly to White Church Road. A shift to Alignment No. 2 could not accommodate these changes.

Following the presentation there was a question and answer period from both the Council members and the public. The following summarizes the questions asked and the answers given:

Q: The cul-de-sac on Highway 6 (Existing) cuts off access to the commercial area along the east side of Highway 6.

A: The cul-de-sac does limit access directly to realigned Highway 6 but access is still allowed from realigned Highway 6 to the cul-de-sac. The Study Team had examined the land use in this area and the official plan does not encourage additional commercial development in the area. New commercial development within the area is encouraged within the settlement area of Mount Hope.

Q: Would new commercial uses be allowed in this area?

A: Provided by M. Pirie, Township Planner:

Existing uses would be allowed to stay, and home occupations would be allowed. Also some types of commercial uses are allowed within an agricultural designation to support agricultural uses. However, generally commercial uses will be encouraged in Mount Hope.

Q: Would the Ministry of Transportation and Communications restrict commercial accesses?

A: It depends upon the type of business. Some of the commercial uses in the area could have their driveways extended. In addition the others right on the cul-de-sac will still be in full view of the traffic along realigned Highway 6.

Q: Will there be school bus service to the area?

A: Yes. The cul-de-sac will be designed so that snow plows, school buses, etc. can turn around.

Q: Does existing Highway 6 have high accident rates?

A: No. Statistically speaking it is similar to other 4-lane undivided roadways.

Q: I am Mrs. Valvasori on White Church Road and I would like to know about wells, drainage and access to White Church Road.

A: In order to gain access to White Church Road, your driveway will be extended. There will be some surplus land that will be the responsibility of the Regional Municipality of Hamilton-Wentworth, however, you will not have to purchase lands for the extension of your driveway.

Wells and drainage will be dealt with at the final design stage. It is a commitment of future work, documented in the Environmental Assessment Report that these issues will be dealt with satisfactorily at the final design stage. Prior to construction, the Ministry must submit a design and construction document with the Ministry of the Environment which shows that these issues have been adequately addressed.

Q: Why doesn't Highway 6 go over White Church Road?

A: It would be more costly but more importantly, there would be additional noise and visual impacts.

Q: Have the farm impacts along Alignment No. 4 been examined?

A: Yes, all the farms within the area have been studied and this information has been reviewed with the Agricultural Representative from the Ministry of Agriculture and Food.

Q: Why don't you provide an interchange at Chippawa Road thus allowing traffic to travel in front of the commercial uses along Highway 6.

A: We haven't looked at that specifically for this meeting. However, it is fair to say that with any shift to another alignment or another interchange location, the impacts would shift from one group of people to another. It is impossible to place the highway within an area and not impact somebody. We attempt to minimize impacts wherever possible. An interchange at Chippawa Road or a shift to Alignment No. 4 will still impact some people.

Q: The property limit between Okimi and Paletta shown on the display doesn't look correct.

A: This will be checked.

Q: When will this facility be built?

A: This is a long-term planning study to designate the route to protect lands for a future freeway. At present, this project is not on the Ministry's construction program. If a decision to proceed with construction were to be made, the approval process and further design work would require an additional five years before actual construction could begin. Once approval has been obtained, this project must compete with all other highway projects within the province for priority.

There were no further questions from the Committee members or public. At this point in time, the Committee passed a resolution to endorse, in principle, Alignment No. 1. This resolution will be presented to the full Glanbrook Council on 3 March 1986.

Mr. Shaver explained that the study team would be back with a presentation of the full recommended alignment some time in March or April and would be seeking Council resolutions at that time. There will be a third series of public information centres some time in April or May of 1986.

APPENDIX F

**Third Series of
Public Information Centres**



Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Results of the Third Series of Public Information Centres

DILLON

April 1986

TABLE OF CONTENTS

| | PAGE |
|---|------|
| 1. INTRODUCTION | 1 |
| 2. CENTRE ORGANIZATION | 1 |
| 3. CONTACT WITH ELECTED REPRESENTATIVES | 3 |
| 4. MAJOR ISSUES | 4 |

LIST OF APPENDICES

| | |
|------------|---|
| APPENDIX A | LISTING OF SPECIAL INTEREST GROUPS AND MEMBERS OF THE PUBLIC WHO RECEIVED SPECIFIC LETTERS INFORMING OF THE PUBLIC INFORMATION CENTRES - April 1986 |
| APPENDIX B | COPIES OF TEXT DISPLAYS USED AT THE PUBLIC INFORMATION CENTRES - April 1986 |
| APPENDIX C | PUBLIC COMMENTS 1. Marritt Hall, Ancaster - April 7, 1986 2. Seneca Unity School - April 9, 1986 |
| APPENDIX D | RECORDS OF PRESENTATIONS TO MUNICIPAL ELECTED REPRESENTATIVES March 17, 18 and 20, 1986 April 14, 1986 May 12, 1986 |

1. INTRODUCTION

The third and final series of Public Information Centres for the Highway 6 (New) - Hamilton to Caledonia Route Location and Preliminary Design Study were held as follows:

1. Monday, 7 April 1986, Marritt Hall, Ancaster Fairgrounds, Highway 53, Ancaster, Ontario.
2. Wednesday, 9 April 1986, Seneca Unity School, Unity Road, Haldimand, Ontario.

The centres were open to the general public from 2:00 p.m. to 5:00 p.m. and from 7:00 p.m. to 9:00 p.m. each day.

On 7 April 1986 the centre was also open to various Provincial Ministries and agencies. At that session, the project was presented to them by MTC and consultant staff.

The main purpose of the Information Centres was to present the recommended alignment in preliminary design level of detail and to give the public an opportunity to ask questions and comment on the study.

2. CENTRE ORGANIZATION

The Information Centres were advertised through a brochure distributed within the general study area. A copy of the brochure is shown as Exhibit No. 1. In addition, all members of the public who had written to either the Ministry or consultant staff regarding the project, who had completed comment forms at previous Information Centres and special interest groups were sent brochures by direct mailing. A listing of all those contacted by direct mailing is shown in Appendix 'A'.

Advertisements were also run in the local newspapers as follows:

1. Regional News This Week - 1 April 1986
2. Ancaster Journal - 2 April 1986
3. Grand River Sachem - 2 April 1986
4. Hamilton Spectator - 2 April 1986

A copy of the advertisement is included as Exhibit No. 2.

Future Schedule

Resolutions from Municipal Councils will be sought for the recommended alignment. A formal Environmental Assessment report will be submitted to the Ministry of the Environment in the Fall of 1986, for its approval.

Additional Information

Interested parties can obtain additional information from the following individuals:

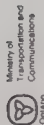
Mr. Peter Shaver, P. Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9

Mr. Ian Williams, P. Eng.

Project Manager
M.M. Dillon Limited
177 Sheppard Avenue East, Willowdale, Ontario M2N 6H5
Phone: (416) 491-2200

Mr. A. Jay Nuttal
Environmental Planner - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario M2N 6E9
Phone: (416) 491-7576

Written comments on the project are also invited



Highway 6 (New) HAMILTON TO CALEDONIA ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Public Information Centres

THIRD SERIES

Background

During the late 1960's and early 1970's several studies and major development proposals led to the identification of existing and potential traffic capacity problems in the Hamilton area. In response the Ontario Ministry of Transportation and Communications in 1974 proceeded with the Highway 6 (New) Study. The study was to identify an acceptable route for a new point-to-point transportation corridor (including the highway and other major utilities, such as hydro and pipelines) between the Hamilton area and Hamilton.

The report issued in 1975 recommended an alignment for Highway 6 (New) between Hamilton and Caledonia, including a new route between Niagara and Caledonia, and a design on was added down between Highway 403 and Book Road in Ancaster for the protection of property.

However, the study noted that the alignment for Highway 6 (New) between Hamilton and the Hamilton area should not be determined until:

- The Hamilton-Wentworth official plan was completed, and
- The plans for the expansion of the Mount Hope Airport site were confirmed.

Once these issues were resolved the Ontario Government proceeded with the Highway 6 (New) Study (Hamilton to Caledonia).

The project is subject to the full requirements of the Ontario Environmental Assessment Act.

Current Status

- To date the following work has been undertaken in the Highway 6 (New) Study:
 - Meetings with Ontario Government Ministries and agencies, and staff of all affected area municipalities.
 - Generation of preliminary alignments.
 - Determination of alternatives at a series of Public Information Centres and to Municipal Councils in June, 1985.
 - Evaluation of feasible alignments.
 - Determination of recommended alignment.
 - Presentation of the technically recommended alignment to Municipal Councils and to Municipal Councils in October, 1985.
 - Preliminary design of the recommended alignment.

Recommended Alignment

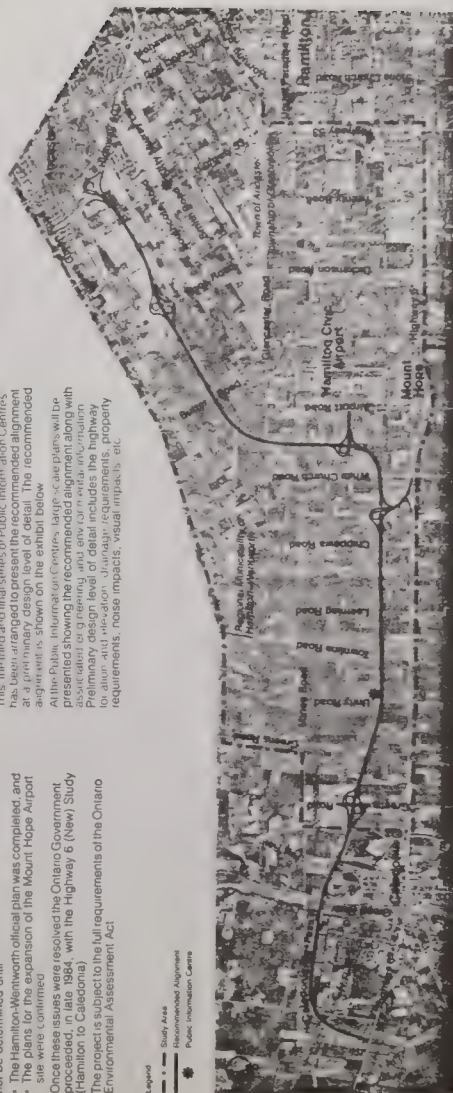
This alignment and final series of Public Information Centres has been arranged to present the recommended alignment at a preliminary design level of detail. The recommended alignment is shown on the exhibit below.

All the Public Information Centres (large-scale plans will be provided) will be held at the same location with associated engineering and environmental information. Preliminary design level of detail includes the highway for alignment, drainage, requirements, property requirements, noise impacts, visual impacts, etc.

The purpose of this brochure is to update you on the status of the project and to confirm the dates and locations of the Information Centres. Members of the public are encouraged to visit these centres to provide comments on the study. These centres provide a final opportunity for the public to meet with the members of the Study Team, who will be available to answer questions or to discuss various aspects of the study.

The locations of the Public Information Centres are shown on the exhibit below.

- The Centres will be held as follows:
- | Centre | Date | Time |
|-------------|--------------|------------------------|
| 1. Ancaster | 7 April 1986 | 2:00 p.m. to 5:00 p.m. |
| 2. Hamilton | 9 April 1986 | 7:00 a.m. to 9:00 p.m. |
- Ancaster Fairgrounds
 1000 Highway 6
 Ancaster, Ontario
 Hamilton
 Seneca Unity School
 Unity Road
 Hamilton, Ontario



The following summarizes the exhibits used and the centre organization:

1. Sign-in sheets at the entranceway.
2. Tables with comment forms, pens, pencils and a box for completed comment forms.
3. A display showing the transportation objectives.
4. A display showing the future schedule and parties to contact for additional information.
5. A display showing the general steps in the Environmental Assessment process.
6. A sketch showing the crossing at Unity Road.
7. A display showing the expressed concerns and proposed mitigation of the impacts at the Unity Road Hamlet area.
8. Large displays at 1:2000 scale showing the recommended alignment in preliminary design level of detail.
9. Displays at 1:2000 scale showing the initial stage at Green's Road, Highway 6 connection, Airport Road connection and Book Road.

Included in this report as Appendix 'B' are copies of the text displays.

Comment sheets were made available for members of the public to note there comments. People were invited to either mail the sheets in or leave them at the centre. Some sheets were also filled out for the public by the Study Team during discussions with members of the public.

Members of the MTC project staff and consultant staff were in attendance at all times.

The attendance at the centres was good and was estimated, based upon the sign-in sheets and the Study Team's estimate of the number of people who did not sign in, as follows:

| | |
|--------------|-------|
| 7 April 1986 | - 120 |
| 9 April 1986 | - 80 |

TOTAL 200

Copies of memos summarizing comments made by members of the public are included in Appendix 'C'.

ONTARIO GOVERNMENT NOTICE

HIGHWAY 6 (NEW) HAMILTON TO CALEDONIA PUBLIC INFORMATION CENTRES (THIRD SERIES)

The third and final series of Public Information Centres have been arranged to present the recommended alignment in preliminary design level of detail.

The recommended alignment is shown on the Exhibit below.

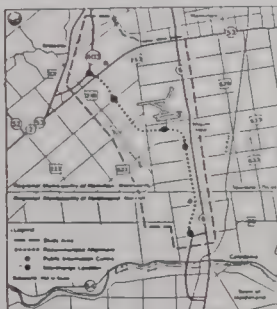
The Centres are as follows:

- | | |
|---|--|
| 1. Monday, 7 April 1986 2.00 to 5.00 p.m. and 7.00 to 9.00 p.m. | 2. Wednesday, 9 April 1986 2.00 to 5.00 p.m. and 7.00 to 9.00 p.m. |
|---|--|

Merrill Hall
Ancaster Fairgrounds
Highway 53
Ancaster, Ontario

Seneca Unity School
Unity Road
Haldimand, Ontario

The project is subject to the full requirements of the Ontario Environmental Assessment Act.



For further information please contact:

Mr. Peter Shaver, P. Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
8000 Yonge Street, Willowdale, Ontario M2H 6E9
Phone: 224-7861

Mr. Ian Williams, P. Eng.
Project Manager
417 Sheppard Avenue East, Willowdale, Ontario M2H 6Y5
Phone: 229-4640

Mr. A. Jay Mulgat
Environmental Planner - Planning and Design Section
Ontario Ministry of Transportation and Communications
8000 Yonge Street, Willowdale, Ontario M2H 6E9
Phone: 224-7978

Written comments are invited.



**Ministry of
Transportation and
Communications**

3. CONTACT WITH ELECTED REPRESENTATIVES

Prior to the Information Centres, presentations were held with various elected representatives on the following dates:

- 17 March 1986 - Township of Glanbrook
- 18 March 1986 - Town of Haldimand
- 20 March 1986 - Haldimand-Norfolk Engineering Committee

The purpose of these meetings was to allow the elected representatives to provide comments as well as to show them the data that would be presented at the Public Information Centres.

An offer was made to make a presentation to the City of Hamilton, Transportation and Environment Committee and the Regional Municipality of Hamilton-Wentworth Engineering Services Committee. However, these Committees did not deem a presentation necessary prior to the Information Centres.

A presentation to the Town of Ancaster was not requested until after the Public Information Centres. A presentation was made on 14 April 1986.

After the Public Information Centres, a presentation was requested by the Hamilton-Wentworth Engineering Services Committee on 12 May 1986.

Minutes of the various presentations of the elected representatives are included in Appendix D.

4. MAJOR ISSUES

Based on an analysis on the comments received at the Information Centres the issues most often raised by the members of the public were proximity and property impacts.

Many of those affected by the recommended alignment attended the Information Centres and expressed considerable concern over direct impacts to their properties. Many people were concerned over the designation limiting their use of the lands and lowering property values.

In addition, many people noted that the proximity effects of the new highway were also very important. One of the major concerns in this regard was that of a residence that would not be directly affected by the new highway but which, after construction, would remain close to the new road.

Listing of special interest groups and members of
the public who received specific letters
informing of the Public Information Centres

April 1986

Ms. K. Adams
9061 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. V. Agozzino
3727 Highway 6
Mount Hope, Ontario
LOR 1W0 ■
Mr. C. Aiken
9047 White Church Road
Group C, Box 34
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. D. Ambridge
277 Alma Lane
Ancaster, Ontario
L9G 2T6 ■
Mr. H. Arnold
R.R. #2
Mines Road
Caledonia, Ontario
NOA 1A0 ■
Mr. G. Arras
Federation of Ontario Naturalists
355 Lesmill Road
Don Mills, Ontario
M3B 2W8 ■
Mr. and Mrs. W. Bates
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. D. Beamsley
9037 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Ms. E. Benedict
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. G. Benedict
9349 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■

Mr. and Mrs. W. Benedict
9370 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. H. Bick
188 Aldercrest Avenue
Hamilton, Ontario
L9B 1L6 ■
Mr. E. Black
5 Sanders Boulevard
Hamilton, Ontario
L8S 3H7 ■
Mr. E. Blagden
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. J.G. Bonenfant
298 Highway 53 East
Ancaster, Ontario
L9G 3K9 ■
Mr. and Mrs. H. Bothwright
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. S. Breitigan
314 Harmony Road
Ancaster, Ontario
L9G 2T2 ■
Mrs. Heather R. Broadbent
President
Ontario Historical Society
78 Dunloe Road, Room 204
Toronto, Ontario
M5P 2T6 ■
Mr. D. Broom
Box 31
R.R. #3
Mount Hope, Ontario
LOR 1W0 ■
Mr. R.A. Brown
378 Highway 53 East
Ancaster, Ontario
L9G 3K9 ■
Mr. Sam J. Burd
309 Harmony Road
Ancaster, Ontario
L9G 2T3 ■

Mr. and Mrs. N. Butt
3266 Homestead Drive
Mount Hope, Ontario
LOR 1W0 ■
Mr. V. Cairn
Unity Road West
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. M. Calder
9133 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. T. Campbell
P.O. Box 58
Mount Hope, Ontario
LOR 1W0 ■
Ms. E. Catherwood
8 Bethany Court
Hamilton, Ontario
L9C 7A4 ■
The Chairperson
Ancaster Township Historical Society
P.O. Box 7163
Ancaster, Ontario
L9G 3L4 ■
The Chairperson
Head of the Lake Historical Society
P.O. Box 896
Hamilton, Ontario
L8N 3P6 ■
Mr. and Mrs. G.A. Chapman
354 East Side Court
Burlington, Ontario ■
Christian Farmers Association
of Wentworth-Brant
ATTENTION: Harry Bootsma,
President
#1 Brantford, Ontario
N3T 5L4 ■
Christian Farmers Association
of Wentworth-Brant
ATTENTION: Ralph Schuurman,
Secretary
#2 Branchton, Ontario
NOB 1L0 ■
Ciamco Developments Limited
c/o The Hillcrest
510 Concession Street
Hamilton, Ontario
L9A 1C4 ■

Mr. H. Clare, Treasurer
Conservation Council of Ontario
Suite 202
74 Victoria Street
Toronto, Ontario
MSC 2A5 ■
Mr. Sam Colaicovo
61 Kent Street North
Simcoe, Ontario
N3Y 3W1 ■
Mr. D. Collins
588 Book Road West
Ancaster, Ontario
L9G 3L1 ■
Mr. C.P. Connor
287 Graham Avenue South
R.R. #2
Caledonia, Ontario
L9A 2W7 ■
Mrs. Connor
R.R. #1
Caledonia, Ontario
NOA 1A0 ■
Mr. Michael Corrado
Alec Murray Real Estate
Fairview Place
3455 Fairview Street
Burlington, Ontario
L7N 2R4 ■
Mr. Courlt
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. G.R. Cowie
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. Andrew Cranbury
153 Hatton Drive
Ancaster, Ontario ■
Mr. J. Cranston
189 Carluke Road
Ancaster, Ontario
L9G 3K9 ■
The Curator
Caledonia Museum
Caithness Street West
Caledonia, Ontario
NOA 1A0 ■
The Curator
Haldimand County Museum
County Court House Park
Cayuga, Ontario
NOA 1E0 ■

Mr. and Mrs. D. Cutts
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. D.L. Davey
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mrs. Donald Dave
9625 Chippewa Road West
Glanbrook, Ontario
LOR 1W0 ■
Mr. J.P. Day
305 Harmony Road
Ancaster, Ontario ■
Mr. V. DeGelder
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. A.F. Dixon
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. G. Dixon
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. Laverda Donovan
211 Butter Road East
R.R. #2
Ancaster, Ontario
L9G 3L1 ■
Mr. L. Dorr
345 Lima Court
Ancaster, Ontario
L9G 3M8 ■
Mr. R. Douglas
Group G, Box 39
4115 Glancaster Road
R.R. #3
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. D. Drummond
9055 White Church Road
Group C, Box 40
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. Duwehan
9065 Chippewa Road
Glanbrook, Ontario
LOR 1W0 ■

Mr. A. Ernest
303 Wilson Street East
Ancaster, Ontario ■
Mr. and Mrs. H. Ernst
998 Upper Wentworth
Hamilton, Ontario
L9A 4V8 ■
Mr. D. Fairfax
91 Strathearn Place
Mount Hope, Ontario
LOR 1W0 ■
Mr. Farnham
9360 Chippewa Road
Mount Hope, Ontario
LOR 1W0 ■
D. Ross Ferguson
57 Amberly Boulevard
Ancaster, Ontario
L9G 3S1 ■
Mr. and Mrs. J. Foley
and McCormack
3613 Highway 6
Mount Hope, Ontario
LOR 1W0 ■
Mr. A. Friesen
395 Cottingham Crescent
Ancaster, Ontario
L9G 3V5 ■
Mrs. E. Fuller
Unity Road
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. F. Geres
9620 Haldibrook
Caledonia, Ontario
NOA 1A0 ■
Mr. John Gordon
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. Edward Granasiuk
285 Shoreacres Road
Burlington, Ontario
L7L 2H3 ■
Mr. and Mrs. H. Granholm
1345 Piddlers Green Road
Ancaster, Ontario
L9G 3L1 ■
Mr. and Mrs. G.R. Killman
R.R. #2
9627 White Church Road
Mount Hope, Ontario
LOR 1W0 ■

Mr. Robert Hall
4207 Glancaster Road
Mount Hope, Ontario
LOR 1W0 ■
Mr. W. Hamilton
86 Edgemont Street South
Hamilton, Ontario
L8K 2H5 ■
Hamilton-Wentworth
Federation of Agriculture
ATTENTION: Joan Lowden,
Secretary
#2 Mount Hope, Ontario
LOR 1W0 ■
Hamilton-Wentworth
Federation of Agriculture
ATTENTION: John Yovanov,
President
#2 Branchton, Ontario
NOB 1L0 ■
Mrs. K. Harrison
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. Gerald Hastie
297 Harmony Road
Ancaster, Ontario
L9G 2T3 ■
Ms. S. Heinbecker
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. P. Heppes
Canadian Nature Federation
Suite 203
75 Albert Street
Ottawa, Ontario
K1P 6G1 ■
Mr. and Mrs. D. Hinkley
Group C, Box 39
R.R. #2
9027 White Church Road
Mount Hope, Ontario
LOR 1W0 ■
Mr. J.R. Hoover
R.R. #2
Mines Road
Caledonia, Ontario
NOA 1A0 ■
Mr. L. Hotz (In Trust)
166 Ferguson Avenue
Hamilton, Ontario
L8L 4Y4 ■

Mr. C. Houwer
9550 Chippewa Road
R.R. #3
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. T. Howden
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. Howley
Mines Road
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. Ann Hughson
Office Administrator
Architectural Conservancy of Ontario
191 College Street
Toronto, Ontario
M5T 1P9 ■
Ms. G. Hutt
9065 White Church Road
Group C, Box 21
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. T. Hyslop
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. H. Hyslop
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. G. Isbister
9630 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. St. Clair Jerome
44 Highway 53
Ancaster, Ontario
L9G 2J8 ■
Mr. L. Jerome
Highway 53
Ancaster, Ontario
L9G 2J8 ■
Mr. W. Jerome
9555 Airport Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Ms. Arlene Johnson
4405 Glancaster Road
Mount Hope, Ontario
LOR 1W0 ■

Mr. and Mrs. J. Jones
9043 White Church Road
Group C, Box 22
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Judy Jones
Mines Road
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. Stuart Jones
Mines Road
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. J. Karschti
302 Harmony Road
Ancaster, Ontario ■
Mr. and Mrs. D. Kauk
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. D. Kennedy, Chairman
Sierra Club of Ontario
47 Colborne Street
Toronto, Ontario
M5E 1E3 ■
Mr. R. Killman
9727 White Church Road West
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. H. Koziol
298 Harmony Road
Ancaster, Ontario
L9G 2T2 ■
Mr. Bill Kronas
70 Emerald Street South
Hamilton, Ontario
L8N 2V3 ■
Mr. Henry Kruis
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. Harold Lampman
L.A.C.A.C. Chairperson
Town of Ancaster
c/o Town Clerk
300 Wilson Street East
Ancaster, Ontario
L9G 2B9 ■
Ms. L. McKnight
Box 160
Caledonia, Ontario
NOA 1A0 ■

Mr. and Mrs. A. Lanari
R.R. #2
Unity Road
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. J. Lane
R.R. #2
Mines Road
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. C. Lawrence
9141 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Ms. C. Lawrey
Mines Road
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Layfield
1296 Trinity Road
R.R. #2
Ancaster, Ontario ■
Ms. J. Layfield
157 Butter Road East
Ancaster, Ontario
L9G 3L1 ■
Mr. Jim Lepore
11 Fisher Crescent
Hamilton, Ontario
L9C 4N1 ■
Mr. J. Lezak
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Ms. M. Lezak
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. J. Little
9210 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
L.A.C.A.C. Chairperson
Township of Glanbrook
c/o Township Clerk
P.O. Box 130
Mount Hope, Ontario
LOR 1W0 ■

Mr. and Mrs. E. MacMilland
9075 White Church Road
Group C, Box 31
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. C. Maby
4425 Glancaster Road
Mount Hope, Ontario
LOR 1W0 ■
Mr. G. Major
R.R. #1
9445 Twenty Road
Mount Hope, Ontario
LOR 1W0 ■
Mr. Howard Mark
L.A.C.A.C. Chairperson
City of Hamilton
c/o City Clerk
71 Main Street West
Hamilton, Ontario
L8N 3T4 ■
Mr. and Mrs. N. Markue
9033 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Ms. Mary E. Martindale
L.A.C.A.C. Chairperson
Town of Haldimand
c/o Town Clerk
P.O. Box 400
Cayuga, Ontario
NOA 1E0 ■
Mr. E. Marvin
3705 Highway 6
Mount Hope, Ontario
LOR 1W0 ■
Mr. and Mrs. L. McArthur
9122 White Church Road
R.R. #2
Mount Hope, Ontario
LOR 1W0 ■
Mr. T. McCartney
150 Hatton Drive
Ancaster, Ontario
L9G 2H6 ■
Mr. B. McFarland
346 Highway 53
Ancaster, Ontario
L9G 3K9 ■
Mrs. M. McKinnon
Box 81
Mount Hope, Ontario
LOR 1W0 ■
Ms. L. McKnight
Grand River Sachem
Box 160
Caledonia, Ontario
NOA 1A0 ■

Ms. Jeannie McNaughton, Planner
Ministry of Municipal Affairs
& Housing
Plans Administration Branch
777 Bay Street
14th Floor
M5G 2E5 ■
Mr. M. McQueen
R.R. #3
Mount Hope, Ontario
LOR 1W0 ■
Mr. McTear
R.R. #1
Caledonia, Ontario
NOA 1A0 ■
Mr. and Mrs. D. Miller
R.R. #2
Caledonia, Ontario
NOA 1A0 ■
Haldimand-Norfolk Federation
of Agriculture
ATTENTION: Sheilagh Moerschfelaer
R.R. #1
Selkirk, Ontario
NOA 1P0 ■
Ms. Jean Morwick
699 Sunnyridge Road
Ancaster, Ontario ■
Mr. and Mrs. Murray
R.R. #2
Mines Road
Caledonia, Ontario
NOA 1A0 ■
Mr. William Murray
112 Alderson Drive
Hamilton, Ontario
L9B 1G5 ■
Mr. and Mrs. B. Nusko
R.R. #3
Mount Hope, Ontario
LOR 1W0 ■
Mr. A. Okimi
3622 Highway 6
P.O. Box 190
Mount Hope, Ontario
LOR 1W0 ■
Mr. F. Ollie
Box 208
Mount Hope, Ontario
LOR 1W0 ■

Haldimand-Norfolk Federation
of Agriculture
ATTENTION: Peter Ondrich, President
R.R. #3
Hagersville, Ontario
NOA 1H0 ■
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HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Copies of text displays used at the
Public Information Centres

April 1986

General Steps in the Environmental Assessment Process

(If you require more information please ask)

1. The route location and planning study involves all interested agencies, groups and the general public through public information centres.
2. The results of the study are documented in an Environmental Assessment (EA) Report.
3. The EA Report is formally submitted to the Ministry of the Environment (MOE) who then circulate the report to all provincial Ministries and agencies for review and comment.
4. These comments are compiled by the MOE into an official government review document.
5. The MOE then make the EA Report and the government review available to the public and municipalities.
6. The public then have 30 days to submit comments to the MOE.
7. Following receipt and review of public comments the MOE can:
 - accept the EA,
 - amend and accept the EA,
 - call a hearing before the Environmental Assessment Board (EAB).
8. Persons who have made written submissions are notified and have 15 days to submit additional comments to the MOE.
9. Following receipt and review of public comments the MOE can:
 - approve the undertaking unconditionally,
 - approve the undertaking with conditions,
 - call a hearing before the Environmental Assessment Board (EAB).
10. If a hearing is held the EAB can recommend approval or non-approval of the project.
11. Final approval is the responsibility of the Minister of the Environment with Cabinet approval or the EA Board where a hearing has been held.

Appendix B

Transportation Objectives

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Unity Side Road Hamlet

| Expressed Concerns | Proposed Mitigation |
|--------------------|--|
| Noise | <ul style="list-style-type: none"> location of highway in cut minimizes noise impacts |
| Visual | <ul style="list-style-type: none"> location in cut minimizes view of highway from Unity Road (see sketch) tree planting can screen views from adjacent properties and pedestrian and vehicular views from Unity Road |
| Safety | <ul style="list-style-type: none"> a bridge is provided on Unity Road to cross over Highway 6 New right-of-way at Unity Road is fenced (see sketch) |
| Travel Patterns | <ul style="list-style-type: none"> no change in vehicular and pedestrian access to and from the hamlet volumes on existing Highway 6 will be reduced |
| Driveway Access | <ul style="list-style-type: none"> no change |
| Traffic Volumes | <ul style="list-style-type: none"> no increase in traffic volumes on Unity Road width of Unity Road is unchanged |
| School | <ul style="list-style-type: none"> minimal property taking no effects on playground and parking lot |

- Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
- Increase use of the Caledonia By-Pass.
- Improve access and provide flexibility for development in Townsend / Nanticoke.
- Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
- Select a route which can be stage – constructed in a realistic and economical manner.

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Highway 6 (New)

HAMILTON TO CALEDONIA

ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Future Schedule

Following this the third and final series of Public Information Centres, the anticipated general schedule is to complete the study and submit the formal Environmental Assessment Report during the Fall of 1986.

The public will have the opportunity to review and comment upon the Environmental Assessment Report.

Additional Information

Interested parties can obtain additional information from either of the following individuals:

Mr. Peter Shaver, P.Eng.
Project Manager - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario. M2N 6E9
Phone: 224-7661

Mr. Ian Williams, P.Eng.
Project Manager
M. M. Dillon Limited
47 Sheppard Avenue East, Willowdale, Ontario. M2N 6H5
Phone: 229-4646

Mr. A. Jay Nuttall
Environmental Coordinator - Planning and Design Section
Ontario Ministry of Transportation and Communications
5000 Yonge Street, Willowdale, Ontario. M2N 6E9
Phone: 224-7578

Written comments on the project are also invited.

Public Comments:

1. Marritt Hall, Ancaster - April 7, 1986
2. Seneca Unity School - April 9, 1986

MEMO TO: File

FROM: J. P. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

FILE: 9576-01/13

DATE: 9 April 1986

THIRD SERIES OF PUBLIC INFORMATION CENTRES, MARRITT HALL, ANCASTER

The third and final series of Public Information Centres for this project were held on 7 and 9 April 1986. This memo details the comments made by members of the public at the Information Centre held on 7 April 1986 at the Marritt Hall in Ancaster, Ontario.

Attendance at the Information Centres was approximately 120 persons. This is based on the sign-in sheets provided, and the Study Team's estimate of the number of people who may not have signed in.

The following summarizes the exhibits and the centre organization:

1. Sign-in sheets at the entranceway.
2. Tables with comment forms, pens, pencils and a box for completed comment forms.
3. A display showing the transportation objectives.
4. A display showing the future schedule and parties to contact for additional information.
5. A display showing the general steps in the Environmental Assessment process.
6. A sketch showing the crossing at Unity Road.
7. A display showing the expressed concerns and proposed mitigation of the impacts at the Unity Road Hamlet area.
8. Large displays at 1:2000 scale showing the recommended alignment in preliminary design level of detail.
9. Displays at 1:2000 scale showing the initial stage at Green's Road, Highway 6 connection, Airport Road connection and Book Road.

The Study Team members in attendance were:

| | |
|-------------------|---------------------|
| • Mr. P. Shaver | - MTC |
| • Mr. B. Ogden | - MTC |
| • Mr. J. Nuttall | - MTC |
| • Mr. G. Forster | - MTC |
| • Ms. J. Tennyson | - M. M. Dillon Ltd. |
| • Mr. I. Williams | - M. M. Dillon Ltd. |
| • Mr. J. Horton | - M. M. Dillon Ltd. |

Comment sheets were made available for members of the public to complete. In addition, Study Team members completed comment sheets during discussions with some members of the public. Immediately following the Information Centres, letters were sent to all members of the public who had completed comment forms responding to their concerns.

The following outlines comments made by members of the public during the Information Centres.

| <u>Name/Address</u> | <u>Comments</u> |
|--|--|
| C. Aiken 9047 White Church Road Mount Hope, Ontario L0R 1W0 | Believes the new highway will enclose him on all sides. Prefers the farmland in the area and believes the highway will bring more pollution and noise to the area. |
| Ms. J. Asselstine 33 Linwood Road | Pleased to see that the Pet Cemetery will not be changed and that access is left intact. |
| P. Arnold 293 Alma Lane Ancaster, Ontario | Concerned with the noise for Harmony Hall residents from Highway 6 (New) and Highway 403. Believes that the noise level standards are not acceptable. |
| Mr. G. Benedict R.R. # 2 Mount Hope, Ontario L0R 1W0 | Believes the high pressure petroleum pipe shown on the plans is in the wrong location. Wishes to know how much property will be taken from the Wilton Benedict farm. If Route No. 1 is selected, it should be moved to the east to be further from his property. |
| Braun Nurseries R.R. # 2 Mount Hope, Ontario L0R 1W0 | Recently purchased Cranston In-Trust property and Highway 6 (New) will cut off access to the existing nursery operation. Requested a 1:2000 plan of the highway in the vicinity of Glancaster Road. |

Name/Address

Ms. D. Carterward
8 Bethany Court

Mr. M. Dean
987 Upper Paradise Road
Hamilton, Ontario

Mr. R. M. Courtice
20 Littlejohn Road
Dundas, Ontario

Mr. D. Disaverio
650 High Valley Road
Ancaster, Ontario

Mr. Lloyd Dorr
345 Lima Court
Ancaster, Ontario

Mr. W. Eagles
659 High Valley Road
Ancaster, Ontario

Mr. A. W. Finn
491 Book Road West
Ancaster, Ontario

Mr. & Mrs. Folsom
14 Hatton Drive
Ancaster, Ontario

Mr. F. Hiltner
1481 Fiddler's Green Road
Ancaster, Ontario

Mr. L. Hotz
166 Ferguson Street North
Hamilton, Ontario
L8L 4Y4

Comments

Grateful that the Pet Cemetery is still protected.

Questioned need for Highway 6 (New).

Appreciated that the Pet Cemetery burial grounds will not be altered.

Requested a 1:10,000 aerial mosaic.

Concerned about future noise levels to property values as a result of the Highway 6 (New) and Highway 403 interchange.

Requested a 1:10,000 aerial mosaic.

Believes that the Book Road interchange will increase traffic on Book Road westbound to Brantford. Wishes to see a study of traffic patterns in the Book Road area that led to the decision to provide an interchange.

Believes Highway 6 (New) should be constructed as soon as possible.

Requested a 1:10,000 aerial mosaic and a 1:2000 plan of the Butter Road area.

Believes there should be a general combined meeting to re-assess Route No. 1 combining the Mayor and Council members of Mount Hope people affected by the proposed route, planning and environmental people, and senior members of the Agricultural Department.

Name/Address

F. Jasowski
R.R. # 2
Ancaster, Ontario

Mr. L. Jerome
14 Hwy 53
Ancaster, Ontario

Mrs. G. Kimiser
33 Linwood Road
Hamilton, Ontario
L9C 6M7

Ms. M. W. MacIntyre
8 Bethany Court
Hamilton, Ontario

Mr. D. McVeigh
125 Lowden Avenue
Ancaster, Ontario

Mr. R. Murray
965 Fiddler's Green Road
Ancaster, Ontario

Mr. C. Nicolhou
212 Butter Road
Ancaster, Ontario

Mr. R. Patterson
52 Hatton
Ancaster, Ontario

Mr. T. Ruzsa
863 Main Street
Hamilton, Ontario

Mr. C. Smith
RR # 2
Ancaster, Ontario

Comments

Requested a copy of the 1:10,000 aerial mosaic.

Questioned need for Highway 6 (New). Believes it is a waste of money.

Believes the Pet Cemetery should be protected.

Thankful that the Pet Cemetery will not be affected.

Believes that Highway 6 (New) should have been constructed several years ago so that Fiddler's Green interchange would not have been required.

Concerned that the airport expansion and its noise levels, and additional truck traffic in the area due to Highway 6 (New) will cause a drop in real estate values in the area.

Recently purchased Davis property on Butter Road. Both lawyer and realtor advised him that the recommended alignment was unlikely to affect him.

Believes Highway 6 (New) was required to take existing and future traffic volume off area roadways.

Requested a 1:10,000 scale aerial mosaic.

Pleased with recommended alignment as it has shifted to not affect his farm operations.

Name/Address

Comments

Mr. S. Tasker
65 Strathearn
Mount Hope, Ontario
L0R 1W0

Suggested improving Airport Road east of Highway 6 By-pass. Likes the overall plan. Believes it should be constructed as soon as possible.

Mr. H. Winegarden
120 Book Road East
R.R. # 2
Ancaster, Ontario
L9G 3L1

Believes the highway proposal will have an adverse effect on his property and living conditions. House is situated 2500 ft. from the centre of the airport runway in a 35 to 40 NEF noise contour level. Believes Highway 6 will add to the noise levels and traffic. The traffic in front of his house will increase by 200%. All of the above will make living there unbearable.

Mr. Z. Zwiep
296 Cornwallis Road
Ancaster, Ontario

Requested a 1:10,000 scale aerial mosaic.

MEMO TO: FILE 9576-01/13
FROM: J. P. Horton
SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study
DATE: 11 April 1986

THIRD SERIES OF PUBLIC INFORMATION CENTRES, SENECA UNITY SCHOOL, HALDIMAND, ONTARIO

The third and final series of Public Information Centres was held on 7 and 9 April 1986.

This memo details the comments made by members of the public at the Information Centre held on 9 April 1986 at the Seneca Unity School in Haldimand, Ontario.

Attendance at the Information Centre was approximately 80 persons. This is based on the sign-in sheets provided and the Study Team's estimate of the number of people who may not have signed in.

The following summarizes the exhibits and the centre organization:

1. Sign-in sheets at the entranceway.
2. Tables with comment forms, pens, pencils and a box for completed comment forms.
3. A display showing the transportation objectives.
4. A display showing the future schedule and parties to contact for additional information.
5. A display showing the general steps in the Environmental Assessment process.
6. A sketch showing the crossing at Unity Road.
7. A display showing the expressed concerns and proposed mitigation of the impacts at the Unity Road Hamlet area.
8. Large displays at 1:2000 scale showing the recommended alignment in preliminary design level of detail.
9. Displays at 1:2000 scale showing the initial stage at Green's Road, Highway 6 connection, Airport Road connection and Book Road.

The Study Team Members in attendance were:

. Mr. P. Shaver - MTC
 . Mr. B. Ogden - MTC
 . Mr. J. Nuttall - MTC
 . Mr. G. Forster - MTC
 . Ms. J. Tennyson - M. M. Dillon Ltd.
 . Mr. I. Williams - M. M. Dillon Ltd.
 . Mr. J. Horton - M. M. Dillon Ltd.

Comment sheets were made available for members of the public to complete. In addition, Study Team members completed comment sheets during discussions with some members of the public. Immediately following the Information Centres, letters were sent to all members of the public who had completed comment forms responding to their concerns.

The following outlines comments made by members of the public during the Information Centres.

Name/Address

Comments

Mr. E. Blagder
 RR # 2
 Caledonia, Ontario
 NOA 1A0

There will be two stoplights within 1000 ft. of each other.

Mr. R. Brydges
 P.O. Box 1508
 Caledonia, Ontario
 NOA 1A0

Recently purchased Smith property next to Unity school. Believes the alignment comes too close to the public school and questions if the school will be closed. Questioned the need for Highway 6 (New) so close to existing Highway 6. Believes Mines Road will serve as a good route to the Airport. Requested a copy of the "General Steps in the Environmental Assessment Process". Requested standards on safe distance for residential areas close to routes carrying hazardous materials. Is opposed to the recommended alignment.

Mr. R. Farnham
 9360 Chippewa Road
 Mount Hope, Ontario
 LOR 1W0

Requested information about water drainage flow at new Highway 6 and Chippewa Road. There have been recent flooding problems at the intersection of Chippewa Road and old Highway 6.

Name/Address

Comments

Mr. F. J. Geres
 RR # 2
 Caledonia, Ontario
 NOA 1A0

In favour of the recommended alignment.

Ms. S. Heinbecker
 RR # 2
 Caledonia, Ontario
 NOA 1A0

Approved the recommended alignment and suggests it be built as soon as possible.

Ms. J. Jones
 Mines Road
 R.R. #2
 Caledonia, Ontario
 NOA 1A0

Believes the new road is beneficial to the area and should be built as soon as possible. Questioned if the new road will affect taxes and if so, how? Pleased with the displays and staff representatives and believes it is important to keep the area residents informed as to the progress of Highway 6 (New).

Mr. S. Jones
 RR # 2
 Caledonia, Ontario
 NOA 1A0

Agrees with the recommended alignment and suggests it be constructed as soon as possible as it improves access to both highways 403 and Hamilton. Believes it will reduce traffic on Mines Road and Unity Road. Believes it will help promote development of the Airport. Complimentary of the Study Team staff and displays. Questioned the effect that Highway 6 (New) will have on taxes.

Mr. H. Lee
 Box 1
 Mount Hope, Ontario
 LOR 1W0

Agrees with the recommended alignment and would like to see it constructed as soon as possible. Complimentary of the presentation and answers provided.

Mr. & Mrs. F. Love
 R.R. # 3
 Mount Hope, Ontario
 LOR 1W0

Requested to see the final design of the Welland River crossing of Highway 6 new. Requested to review the Environmental Assessment Report and questioned when a hearing would be held.

Mr. C. Nicolhou
212 Butter Road
Ancaster, Ontario

Requested copies of all documentation regarding the proposed Highway 6 (New) concerning drainage, noise and visual impacts. Particularly interested in effects to lots 45 and 44 of Concession 6 in the Township of Ancaster.

Mr. G. Okimi
Box 190
Mount Hope, Ontario
LOR 1W0

Requested 1:2000 plan of Highway 6 (New) in the vicinity of the Okimi property.

Mr. W. Tong
Unity Road
RR # 2
Caledonia, Ontario

Residence is less than 200 yards from the proposed highway. Believes the highway will affect property values and deface the present view at the back of his house.

**Records of presentations to
Municipal Elected Representatives**

March 17, 18 and 20, 1986

April 14, 1986

May 12, 1986

MEMO TO: File 9576-01/15

CC: P. Shaver
J. Nuttall

FROM: J. P. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

DATE: 18 March 1986

PRESENTATION TO THE TOWNSHIP OF GLANBROOK COUNCIL

A presentation was made prior to the third series of Public Information Centres to the Township of Glanbrook Council Meeting on the evening of 17 March 1986.

The Study Team members in attendance were:

- . Mr. P. Shaver - MTC, Planning and Design
- . Mr. J. Nuttall - MTC, Environmental Unit
- . Mr. J. Horton - M. M. Dillon Ltd.

1. GENERAL

The display boards to be used at the upcoming third series of Public Information Centres were set up in the hall adjacent to the Council Chambers. However, as Council had recently reviewed the alignment in the Glanbrook area, they did not feel it was necessary to adjourn the meeting to examine the boards. The displays consisted of 1:2000 scale plans of the recommended alignment.

In addition, the 1:5000 area mosaic showing the alternative alignment was set up adjacent to the Council Chambers, but again, this was not reviewed by Council.

Mr. Shaver made a short introduction stating that at this point in the study the preliminary designs of the recommended alignment was complete. The third and final series of Public Information Centres are being sought from all other affected municipalities at that time. Mr. Shaver went on to say that he realized that Council had planned a field review of the alternative alignments for 5 April 1986. Thus, Council may not wish to discuss the resolution immediately, but hold it over until their field review was complete. Mr. Shaver suggested that Council may require additional information following a field review and the Study Team would be pleased to meet with them again.

Following Mr. Shaver's introduction, Mr. Horton briefly presented the recommended alignment making reference to handout notes provided to all Council members and members of the public in attendance. These presentation notes are appended to this memo and are a response to the major concerns raised by Council and members of the public in the Glanbrook area.

2. QUESTIONS AND ANSWERS

Q: What is the distance between old Highway 6 and new Highway 6?

A: Approximately 600-800 metres.

Q: Alignment No. 4 does not appear to follow the lot lines.

A: At Townline Road, the surveys change direction, thus it is not possible to follow the lot line both north and south of Townline Road. If the lot lines are followed south of Townline Road then the alignment goes through a residential community along Glanaster Road. If the lot lines are followed north of Townline Road, as they are with Alignment No. 4, several major severances are created south of Townline Road.

Q: Why don't you move the connection between old Highway 6 and new Highway 6 south to the Chippewa Road area?

A: This alternative was suggested by several members of the public, and in particular, Mr. and Mrs. Whaling of Mike's Marina. A sketch was prepared during a meeting with Mr. and Mrs. Whaling showing that severe impacts occurred to residences and farmsteads in the area. The current connection between old Highway 6 and new Highway 6 does not require the removal of any residences or farmsteads. Therefore, it was felt to be superior to an interchange at Chippewa Road.

Q: What became of the comments made by the members of the public at the last Planning Committee Meeting? It does not appear that these were incorporated in any of the plans that you are presenting tonight.

A: The Minutes of Meeting were prepared of the Planning Committee Meeting and are enclosed with the report sent to the Clerk titled "Results of the Property Owners Meeting (White Church Road Area)". As with any other Minutes of Meeting, if you do not agree with the interpretation of the questions and answers from the public, then please feel free to notify the Study Team of this.

With respect to the process for taking into consideration the residents' concerns, this was the function of the Property Owners Meeting held on 12 February 1986. Members of the public attended that meeting and were asked for their comments, however, it is the responsibility of the Study Team to determine whether any modifications are appropriate. The comparison of alternatives is very complex and many concerns and impacts must be weighed against each other. The last presentation to the Planning Committee was held at the request of the Chairman of the Planning Committee, to discuss the implications of a shift to Alignment No. 2 in the Glanbrook area.

Q: What happens if the Municipality does not support the recommended alignment in the Council resolution?

A: The Ministry will not proceed with a new project if it does not have full support from all affected municipalities. If Council chooses not to support the recommended alignment, a period of negotiations will be undertaken to try to alleviate the concerns of Council. This period of negotiations will take into consideration the concerns of the Municipality or the Regional Municipality and attempt to provide a solution to them.

There were no further questions.

The Council then passed a resolution to defer consideration of the resolution until after their field review.

PRESENTATION NOTES TO GLANBROOK COUNCIL MEETING OF 17 MARCH 1986 REGARDING THE HIGHWAY 6 (NEW) PROJECT

I OBJECTIVES

There are three major traffic movements to be served by Highway 6 (New):

- 1) Long distance trips from Caledonia and areas to the south in Haldimand-Norfolk to Highway 403;
- 2) The airport;
- 3) Trips from Caledonia and areas to the south in Haldimand-Norfolk to Hamilton.

Alignment No. 1 serves all three movements very well.

As you move away from Highway 6 (Existing), poorer service is provided to Hamilton and to the airport. Alignment No. 4 would serve long distance travel, provide reasonable access to the airport but would not serve travel to Hamilton.

II AIRPORT ACCESS

Only Alignment No. 1 allows "direct" access to the airport.

III DEVELOPMENT POTENTIAL

Alignment No. 1 favours development of industrial land between Highway 6 (Existing) and Highway 6 (New) and between Airport Road and Highway 6 (New). It allows development to jump to the other side of Highway 6 (New) if additional development lands are required.

Alignment No. 2, 3 and 4 offer less potential for industrial development. Alignment No. 4 would offer the least, as it runs along the edge of the Township, away from the airport and the Village of Mount Hope.

IV WHITE CHURCH ROAD INTERCHANGE AND REALIGNMENT

Council specifically requested that the White Church Road Interchange be placed to the south of White Church Road. This is possible only with Alignment No. 1.

Alignment No. 2, 3 and 4 would require an interchange with White Church Road and a realignment of White Church Road through to existing Highway 6. This realignment would preclude development in the vacant lands north of White Church Road.

V AGRICULTURAL IMPACTS

The difference in land required between all four alignments is less than 10%.

Alignment No. 2 would require removal of the Benedict Farmstead on White Church Road.

Alignment No. 4 has the greatest area of landlocked parcels.

Alignment No. 4 has the greatest impact to farm operations, making four units non-viable, including the Scott Farm on White Church Road.

VI NATURAL ENVIRONMENT

Alignment No. 2 bisects the waterfowl nesting area. Alignment No. 2 and 3 impact several major wood lots. Alignment No. 1 removes some of the easterly edge of the waterfowl area.

VII COST

There is a less than 10% difference in construction cost between all 4 alignments. Land costs represent only 5% of the total construction cost.

VIII COMMERCIAL USES ALONG HIGHWAY 6 (EXISTING)

All alignments will reduce traffic on Highway 6 (Existing). Alignment 2, 3, and 4 require a realignment at White Church Road and a 'Tee' intersection with Highway 6 (Existing) north of White Church Road away from the existing commercial uses. Alignment No. 1 has the 'Tee' intersection on Highway 6 (Existing) in the vicinity of most of the commercial use along Highway 6.

IX BROCHURE DISTRIBUTION AND PUBLIC NOTIFICATION

Some members of the public have commented that they have not been notified of the Study.

Brochures were distributed by mail during April, June and October 1985.

Recent discussions with Canada Post in Mount Hope have confirmed that all persons and businesses (approximately 1200 addresses) are covered by the LOR 1W0 postal code. This includes the entire area bounded by: Glancaster Road to the west, Twenty Road to the north, Trinity Church Road to the east, Townline Road to the south.

This area covers all of Mount Hope and Rural Routes #1, #2 and #3.

MEMO TO : File 9576-01/15
FROM : J. P. Horton
SUBJECT : Highway 6 (New) Hamilton to Caledonia
Route Location and Preliminary Design Study
DATE : 20 March 1986

PRESENTATION TO THE TOWN OF HALDIMAND

On 18 March 1986, a presentation was made to the Town of Haldimand Works Committee prior to the third series of Public Information Centres.

The Study Team members in attendance were:

Mr. P. Shaver - MTC, Planning and Design
Mr. J. Horton - M. M. Dillon Ltd.

1. GENERAL

The display boards to be used at the upcoming third series of Public Information Centres were presented to the Council. These consisted of the 1:2000 plans of the recommended alignment at preliminary design level of detail. In addition a sketch of the crossing of Highway 6 (New) at Unity Road and a table showing expressed concerns and proposed mitigation was presented.

Mr. Shaver made a short introduction stating that the Ministry was seeking Council resolutions with regards to the preliminary design of Highway 6 (New) from Highway 403 to the Caledonia By-pass. The proposed Council resolution had been previously sent to the Clerk. Members of the Study Team were in attendance to present the displays to be shown to the public on 7 and 9 April 1986 and to answer any questions from the Council members.

Mr. Horton briefly presented the recommended alignment using the 1:2000 plan.

2. QUESTIONS AND ANSWERS

Q: How many residences will be removed within the Town of Haldimand?

A: One, the Simmons property on Unity Road.

Q: How many industrial buildings will be removed on Green's Road?

A: There are two small existing industrial buildings south of Green's Road and east of the Caledonia By-pass that would be required for the ultimate interchange lands.

Q: Will there be bridges on all of the crossings of Highway 6 (New)?

A: Yes, there will be interchanges at Green's Road, south of White Church Road, opposite the airport, and at Book Road. All other roads will have bridges with the sideroad going over Highway 6 (New).

Q: When will the facility be built?

A: The project is currently not on the Ministry's construction schedule. Given the approval procedures and design requirements, construction could not begin for approximately five years.

Q: How would the facility be staged?

A: Initially, it would be a two lane arterial roadway. The first stage would likely be from Highway 403 to Butter Road. The second stage would likely be two lanes from the Caledonia By-pass to the White Church Road interchange. The third stage will be to join the first and second stages.

Q: Can the Ministry control the sale of lands in the vicinity of the proposed highway?

A: Once the lands have been designated, the Ministry has control over all lands within the right-of-way. However, until the designation is laid down the Ministry has no control, it can only advise the local municipalities that the highway is currently in the planning stage.

Following the presentation the Committee members passed a resolution approving, in principle, of the recommended alignment for Highway 6 (New) between Highway 403 and the Caledonia By-pass. This resolution will be presented to Council, for its approval, at the next Council Meeting on 24 March 1986.

MEMO TO: File 9576-01/15

FROM: J. P. Horton

SUBJECT: Highway 6 (New) - Hamilton to Caledonia
Route Location and Preliminary Design Study

DATE: 21 March 1986

**PRESENTATION TO THE REGIONAL MUNICIPALITY OF HALDIMAND-NORFOLK
ENGINEERING COMMITTEE**

A presentation was made prior to the third series of Public Information Centres to the Regional Municipality of Haldimand-Norfolk Engineering Committee on 20 March 1986. The Study Team members in attendance were:

| | |
|------------------|----------------------------|
| • Mr. P. Shaver | - MTC, Planning and Design |
| • Mr. J. Nuttall | - MTC, Environmental Unit |
| • Mr. J. Horton | - M. M. Dillon Ltd. |

1. GENERAL

Display boards to be used at the upcoming third series of Public Information Centres were presented to the Engineering Committee. These consisted of 1:2000 plans of the recommended alignment at the preliminary design level of detail. In addition, the sketch of the crossing of Highway 6 (New) at Unity Road and a table showing expressed concerns and proposed mitigation were also displayed.

Mr. Shaver made a short introduction stating that at this point in the study, preliminary design of the recommended alignment was complete. The third and final series of Public Information Centres are to be held on 7 and 9 April 1986. Resolutions are now being sought from all affected municipalities. A proposed draft resolution had been sent to the Clerk for consideration by the Engineering Committee.

The Study Team was in attendance at the Planning Committee Meeting to present the recommended alignment for Highway 6 (New), to receive comments from the Committee, and answer their questions.

Following Mr. Shaver's introduction, Mr. Horton briefly presented the recommended alignment outlining the major controls/constraints and impacts.

2. QUESTIONS AND ANSWERS

- Q: Could you please explain what is meant by the blue and green areas shown on the plan?
- A: The green areas indicate woodlots which have been identified as having some significance through field reviews and meetings with the Ministry of Natural Resources. Blue areas indicate streams and minor ponds. In addition, shown in green is the waterfowl nesting area just south of White Church Road.
- Q: Regarding transfers of existing Highway 6, are you seeking a transfer of Highway 6 (Existing) from Green's Road to Townline Road or all the way through to the south end of the by-pass?
- A: As part of the Highway 6 (New) project we are seeking a transfer of existing Highway 6 between Green's Road and the Hamilton-Wentworth/Haldimand-Norfolk boundary at Townline Road.

The Ministry is also seeking a transfer of Highway 6 through the Town of Caledonia, but this is not part of the Highway 6 (New) Study.

- Q: Is this Study under the Environmental Assessment Act?
- A: Yes, the Study is fully subject to all of the requirements of the Ontario Environmental Assessment Act. Submission of the EA document is expected later this year.
- Q: Do the plans show the ultimate facility?
- A: Yes. The plans show a full six-lane freeway but it is likely that Highway 6 (New) will be constructed in stages. The first stage would likely be two lanes from Highway 403 to Butter Road. The second stage will likely be two lanes from the Caledonia By-pass to the Airport Road interchange. The third stage will likely be two lanes connecting the first and second stages.
- Q: When do you propose transferring Highway 6 (Existing) to the Region, after the ultimate facility is built?
- A: Transfer of Highway 6 (Existing) within the Region of Haldimand-Norfolk would be sought once a section of Highway 6 (New) was built from Green's Road to Townline Road.
- Q: When will this facility be built?
- A: Because of the approval and design requirements, the facility cannot be built within the next five years. After five years it must compete with all other major projects within the province for funding.

- Q: Has the staging proposal changed since you last discussed it with us?
- A: Yes. The last time we were here, we probably stated that the staging would begin at the north at Highway 403 and proceed in a continuous manner to the south.
- Q: Could stages 1 and 2 be built at the same time?
- A: Yes, it is possible. The exact staging and timing requirements have not been determined at this time.
- Q: What is the right-of-way width?
- A: There is an 80m right-of-way for Highway 6 (New). This is 20m less than the usual 100m right-of-way for a full freeway. The narrower right-of-way was proposed in this area to mitigate the loss of farmlands.
- Q: Is the Environmental Assessment Report submitted on the basis of the ultimate freeway?
- A: Yes. The EA document will show plans of the full freeway including all interchanges. However, as part of the document the initial stage at grade intersections will also be shown.
- Q: What are the steps between now and the 5-year time frame where construction can begin?
- A: The Environmental Assessment document will be submitted later this year. The review of this document could take up to one year. Thus, we are hoping to achieve approval some time in 1987. Once approval is obtained the Ministry has permission to designate the lands.

After approvals, final design and property acquisition must take place. This would take approximately two years. Then there are various MTC internal reviews and additional planning stages. Thus, this totals approximately four to five years.

- Q: Will the project be included in the capital budget before it is approved?
- A: It is possible that the Highway 6 (New) project could be included in the capital budget prior to obtaining approvals. However, it must compete with funding for other projects. The ultimate facility would cost at least \$35 million. Thus, the cost and benefits of the facility must be weighed with all other facilities in the province. An important consideration in this evaluation is the input from the municipalities and their support of the project.

- Q: Can the EA process change the alignment?
- A: Yes. It is possible that based on the review of the report, the alignment may shift in some locations.
- Q: What is the possibility of a hearing or consolidated hearing?
- A: The MTC will not request a hearing for the Highway 6 (New) project. At this time MTC is not anticipating a hearing of any kind.
- Q: What is the cost of the environmental approvals as opposed to the straight engineering design?
- A: It is very difficult on a project like this to separate the engineering from the approval stages as they are both inter-related and inter-active.
- Q: Will the owners of landlocked parcels be compensated?
- A: There are only a few landlocked parcels within this recommended alignment. These landlocked parcels will be purchased by the MTC and then offered for sale to the adjacent owners.
- Q: Will the crossing at Unity Road be landscaped as shown on the sketch?
- A: Landscaping details are kept until the final design stage. At the final design stage, the amount and extent of landscaping will be determined through consultation with the municipality.
- At this point there were no further questions.

The Works Committee approved, in principle, of the recommended alignment for Highway 6 (New) from Highway 403 to the Caledonia By-pass. This resolution will be presented to the next Council Meeting.

MEMO TO: File

FROM: J. Horton

SUBJECT: Highway 6 (New) - Route Location and Preliminary Design Study

FILE NO: 9576-01/15

DATE: 15 April 1986

PRESENTATION TO THE TOWN OF ANCASTER

On 14 April 1986 a presentation was made to the Town of Ancaster Council.

The Study Team members in attendance were:

Mr. P. Shaver - MTC Planning and Design
 Mr. J. Nuttall - MTC Environmental Unit
 Mr. J. Horton - M.M. Dillon Limited

1. GENERAL

The display boards used at the third and final series of Public Information Centres were presented to the Council members. These displays included:

- a 1:2000 plan of the recommended alignment from Highway 403 to the Caledonia By-pass;
- a 1:10,000 aerial mosaic showing the technically recommended alignment and the alternative alignments studied.

The displays were mounted outside the Council Chambers and after a brief introduction by Mr. Shaver, Council members were invited to review the displays and ask questions.

Mr. Horton briefly presented the 1:10,000 mosaic showing the alternative alignments considered and the 1:2000 displays showing the recommended alignment.

2. QUESTIONS AND ANSWERS

The following is a summary of the questions posed by Council members and the answers given.

Q: Why was the Council presentation given after the Information Centres, where as in the other municipalities it was given prior to the Information Centres?

A: We attempted to make a presentation to the Council prior to the Information Centres as we did in other municipalities. However, due to the timing of the Council meetings we were unable to make a presentation. We apologize for any inconvenience this may have caused.

Q: The recommended alignment does not appear to follow the lot lines between Book and Butter Road?

A: That is the previous technically recommended alignment as presented to the public in the Fall of 1985. Based on comments received from members of the public, the Ministry of Agriculture and Food and the Ministry of Natural Resources, the alignment was modified as shown on the 1:2000 plans, where it does follow the lot lines.

Q: For lands now designated for Highway 6 (New) but not required for the new facility will you lift the designation?

A: Yes. Once a new designation is in place, any lands not required under the old designation will have the designation removed.

Q: When will Highway 6 (New) be built?

A: There are no plans for construction at this time. Given the approval and design process the nearest date would be in approximately five years. Beyond that, Highway 6 (New) must compete with other projects within the Province for funding.

Q: Do you believe the designation is fair to the property owners within whose lands you are designating, as it puts a freeze on the lands for an unlimited period of time?

A: There is some problem for the owners within the designation, however, if the owner wishes to sell, a hardship case can be made and the Ministry will buy the land. A hardship case was presented by Mr. McFarland on Highway 53 and his house was bought by the Ministry. If the owner does not wish to sell, there is little effect.

Q: When is land purchased for Highway 6 (New)?

A: Generally within two years prior to construction.

Q: When do you expect the section from Highway 403 to the airport to be built?

A: This is most likely the first stage and will be built as a two lane facility. It is possible that this facility would be built to service the airport as a first stage and not extended until the need develops.

Q: When would four lanes be built?

A: As demand required.

Q: Will the MTC buy the Donovan property as it is right beside the new highway and in front of a bridge.

A: With the Donovan property, Butter Road is being shifted further away from the house. There will be a structure over Highway 6 (New) but not immediately in front of the house. A noise study was undertaken and it was found that the noise from the airport will exceed that from Highway 6 (New). Also as discussed earlier, the Donovan property will be at the end of Highway 6 (New)'s first stage at Butter Road. The first stage will have an at-grade intersection, thus there will be no structure in front of Ms. Donovan's house. She will be at the intersection of two 2-lane roadways during the first stage.

Q: Will the existing drainage problems at Highway 53 be alleviated with the construction of Highway 6 (New) over Highway 53?

A: A detailed drainage study will be undertaken at the time of final design. However, a study was undertaken of this crossing to determine the profile for Highway 6 (New). Based on this study Highway 6 (New) had to go over Highway 53. The drainage design for the crossing will not make any existing drainage problems in the area any worse. In fact, it may make them better as the highway drainage will intercept some of the existing drainage channel.

Q: Why is there an interchange at Book Road?

A: This is a long term planning study and it is the long term plans of Transport Canada to provide a terminal on the north side of the airport on Dickens Road. When the terminal is built the interchange at Book Road will service it. The interchange also serves local traffic in Ancaster.

Q: We believe the designation is unfair to the property owners in the area as they do not know about the designation and do not understand it.

A: During our third series of Public Information Centres we contacted virtually every property owner who will be designated. We have explained the designation to these people and the process for claiming a hardship.

Q: If we believe, as a Council, that the first stage of Highway 6 (New) to Butter Road will off-load Fiddler's Green interchange, and thus we want it built as soon as possible, is it appropriate to put this in the resolution?

A: Yes. Any support from the local municipalities for any stage on Highway 6 (New) is important.

At this point there were no further questions and the Council reassembled in the Council chambers.

Some Council members expressed concern over the impacts to the two houses at Highway 53 and one house at Butter Road, and questioned Mr. Shaver if anything could be done to mitigate these residences or would MTC purchase them?

Mr. Shaver explained that all forms of mitigation have been examined and that noise mitigation is being proposed at Highway 53. In addition, it is not the Ministry policy to purchase houses or property outside of the right-of-way for proximity impacts.

A resolution was passed by the Council asking that staff review the proposal and submit a report in two weeks' time for their consideration.

MEMO TO: File
CC: P. Shaver, J. Nuttall, J. Horton, J. Tennyson
FROM: I. Williams
SUBJECT: Highway 6 (New) - Hamilton to Caledonia
FILE NO: 9576-01
DATE: 13 May 1986

MEETING WITH HAMILTON-WENTWORTH ENGINEERING SERVICES COMMITTEE

On 12 May 1986, this project was presented to the Engineering Services Committee of the Regional Municipality of Hamilton-Wentworth. The meeting convened at 2:00 p.m. in Hamilton City Hall.

Study Team members in attendance were:

Mr. P. Shaver - M.T.C.
Mr. J. Nuttall - M.T.C.
Mr. J. Horton - M.M. Dillon Limited
Mr. I. Williams - M.M. Dillon Limited

Mr. Shaver gave a brief introduction to the presentation, noting that the prime purpose of the meeting was to obtain a resolution from Regional Council approving of the recommended alignment for Highway 6 (New) from Hamilton to Caledonia.

Mr. Horton then presented the recommended alignment using the 1:2000 base maps. Mr. Horton described the alignment controls and explained the location and design of roadway intersections/interchanges with the new facility.

Generally, Committee members made the following observations:

- the recommended alignment appears to be the best compromise in terms of impacts, and will be approved by local Councils and Regional Council.
- there are some residual proximity property impacts, which the members would like the Ministry to consider further during detailed design.
- the Ministry should be strongly encouraged to proceed with con-

struction, particularly on the north end, to service the airport as soon as possible.

APPENDIX G

Effects to Farm Operations

TABLE OF CONTENTS

HIGHWAY 6 (NEW) EFFECTS TO FARM OPERATIONS

| | PAGE |
|---|------|
| 1. INTRODUCTION | 1 |
| 1.1 General | 1 |
| 1.2 This Report | 2 |
| 2. AGRICULTURAL IMPACTS | 3 |
| 2.1 Agricultural Land | 3 |
| 2.2 Farm Severances | 3 |
| 2.3 Farms Affected | 4 |
| 2.4 Farmsteads Removed | 4 |
| 2.5 Effects to Farm Operations | 4 |
| 2.6 Evaluation Criteria | 5 |
| 3. FEASIBLE ALIGNMENTS | 6 |
| 3.1 General | 6 |
| 3.2 Book Road Crossing | 7 |
| 3.3 Agricultural Land Required for the Feasible Alignments | 8 |
| 3.4 Farm Severances for the Feasible Alignments | 11 |
| 3.5 Summary of Agricultural Impacts for Feasible Alignments | 20 |
| 4. AIRPORT ROAD ALIGNMENT | 23 |
| 5. THE RECOMMENDED ALIGNMENT | 25 |
| 5.1 Book Road to Butler Road | 25 |
| 5.2 White Church Road Area | 25 |
| 5.3 Agricultural Effect of the Recommended Alignment | 28 |

1. INTRODUCTION

1.1 General

The Ministry of Transportation and Communication has commissioned M.M. Dillon Limited to undertake a route location and preliminary design study for Highway 6 (New) from the Hamilton area to Caledonia. This study is being conducted under the requirements of the Ontario Environmental Assessment Act.

Highway 6 (New) will ultimately be a six-lane rural freeway facility with access at interchanges only. A basic 80 m right-of-way will be adopted. As an initial stage, at grade intersections will be considered at future interchange locations only. All other roadways crossing Highway 6 (New) will be grade separated. No road closures are contemplated. Thus, there will be no access to Highway 6 (New) other than at interchange locations.

The study area, shown in Exhibit 1, is rural and agricultural in nature and to a large extent comprises class one agricultural land. Crops grown include corn, alfalfa, oats, barley, winter wheat, winter canola, and soy bean. The majority of the corn, alfalfa, oats and barley is used as livestock feed on local farms.

Winter wheat is the dominant cash crop in the area. Soy bean and canola are not grown to any large extent. The sandy loam soils to the northeast are used for potato, vegetable and fruit production.

Other uses of land include sod farms and nursery operations.

These are also dairy, beef, and hog operations. Dairy farms are mainly concentrated in the western portion. Beef producers can be found throughout and, for the most part, they

are small cow/calf operations. Hogs are also raised throughout on mixed farming operations. There is a large hog farm adjacent to the current airport expansion lands.

Poultry is also raised on many small mixed farming operations. The majority of the poultry and eggs produced from these farms is for personal consumption. There is a large poultry operation located at the junction of White Church and Glancaster Roads.

Livestock such as goats and horses are raised on a number of mixed and hobby farms in the Study Area.

Throughout the study, several sources have identified effects to farm operations as a major issue. These include:

1. The Ontario Ministry of Agriculture and Food.
2. The Town of Ancaster by Council resolution dated 22 July 1985.
3. Local farmers.
4. Field investigations carried out as part of this study.

1.2 This Report

In response to these concerns, this report has been prepared to document the effects to farm operations. The report generally follows the overall evaluation process. Section 2 of this report documents the criteria used in the evaluation. In Section 3 these criteria are applied to the two subsections of the study area; one from Highway 403 to Glancaster Road and Glancaster Road to the north end of the Caledonia By-pass.

The evaluation of the feasible alignments led to the selection of a preferred alignment. In Section 4 this alignment is compared to an alternative along Airport Road. Finally, effects to farm operations for the recommended alignment are outlined in Section 5.

2. AGRICULTURAL IMPACTS

2.1 Agricultural Land

The Ontario Ministry of Agriculture and Food provided Canadian Land Inventory CLI mapping on the soil capability for agricultural purposes within the study area. Based on this mapping, the amount of agricultural land required by class for Highway 6 (New) and its interchanges was calculated for each alternative alignment. These calculations were based on an ultimate six-lane freeway facility with interchanges.

The Ontario Ministry of Agriculture and Food also identified a specialty crop area north of Book Road between Fiddler's Green Road and Southcote Road. This land is used primarily for growing potatoes.

2.2 Farm Severances

In order to assess the impact of the alternative alignments on farming parcels, two definitions of farm severances were developed in conjunction with representatives of the Ontario Ministry of Agriculture and Food. These are as follows:

1. Landlocked Parcels

Landlocked parcels were defined as those portions of a farm that would not have access to a public roadway due to the alignment of Highway 6 (New). Direct access to Highway 6 (New) will not be possible as it will be a controlled access facility in both the initial and ultimate stages. The number of parcels landlocked and the total area of landlocked parcels were recorded for each alignment.

2. New Units

A new farm unit is created when the alignment of Highway 6 (New) severs an existing farm but access to a public roadway is maintained.

Wherever possible the alternative alignments for Highway 6 (New) paralleled existing lot lines to minimize the number of farm severances.

2.3 Farms Affected

In addition to recording the number of severances, the number of farms that were not severed but required the taking of some lands were noted. These land takings were generally along the back of lot lines.

2.4 Farmsteads Removed

The number of farmsteads removed by each alignment was recorded. A farmstead was differentiated from a rural residence based on its importance to the farming operation and the agricultural community.

2.5 Effects to Farm Operations

At the first and second series of Public Information Centres, a survey of agricultural operations was conducted.

The questionnaire requested information on the size of operation, the ownership of the land, the longevity of the operation and the type of farming activity. In addition, particular questions were asked concerning the movement of

machinery which might be affected by the alignment of Highway 6 (New) and on the effects of the project on farming operations.

2.6 Evaluation Criteria

Through discussions with representatives of the Ontario Ministry of Agriculture and Food, local farmers and input from Ministry and consultant study team members, the following criteria were developed for the evaluation of agricultural impacts:

1. Area of agricultural land by class.
2. Area of specialty crop land affected.
3. Number of farmsteads removed.
4. Number of farms affected.
5. Number of farm severances (landlocked parcels and new units).
6. Area of landlocked parcels.

3. FEASIBLE ALIGNMENTS

3.1 General

Exhibit 1 shows the feasible alignments under consideration. There are three alternative alignments between Highway 53 and Glanaster Road. These alternatives are labelled A, B and C. At both Highway 53 and Glanaster Road the alignments meet at a common point.

There is an existing Ministry of Transportation and Communications (MTC) designation on lands at Highway 403 and between Highway 53 and Book Road. This designation was laid down in the mid-1970s to protect land for an interchange between Highway 6 (New) and Highway 403.

From Glanaster Road southerly to Greens Road (at the north end of the existing Caledonia By-pass), four alternative alignments were considered. These are labelled 1 through 4.

For these feasible alternatives, interchanges were considered at the following locations:

1. Highway 403.
2. Book Road.
3. Butter Road/Airport Access.
4. Glanaster Road.
5. White Church Road.
6. Greens Road.

3.2 Book Road Crossing

Before the alternative alignments A, B, and C could be compared, an alignment for Alternative A at Book Road required additional study. The Book Road crossing for Alternative A was identified as having many constraints and controls in addition to agricultural concerns. The details of the evaluation of the alternative are detailed in the Environmental Assessment Report. This report will focus primarily on the agricultural impacts. Briefly, the controls and constraints governing the alignment selection at Book Road consisted of:

1. The navigation, lighting, and zoning requirements of the recently expanded Hamilton Civic Airport.
2. There is a 230 KV hydro line which has recently been lowered at the end of Runway 12L to accommodate the Airport's zoning requirements.
3. The Ancaster Animal Cemetery lies directly opposite the existing Ministry of Transportation and Communications (MTC) designation.
4. There is an abandoned human cemetery on the north side of Book Road immediately adjacent to the MTC designation.
5. There are two historically significant houses immediately west of the MTC designation, just north of Book Road.
6. There are several residences in the immediate vicinity.
7. There are several large viable farm operations in the area, some with specialty crop lands.

Three alternatives for the Book road interchange and crossing were developed. They are as follows:

- | | |
|----|--|
| A1 | Swings to the west of the existing designation |
| A2 | Swings to the east of the existing designation |
| A3 | Follows the existing designation |

Table 3-1 shows the agricultural factor used in the evaluation of the Book Road crossing. These factors apply to the area midway between Highway 53 and Book Road, and midway between Book Road and Butter Road.

All three alternatives require the same amount of land in total, A1 has the highest amount of Class 1 and 3 lands with A2 having the lowest Class 1 and 3 lands. All three alignments affect four farms. Alternative A3 does not sever any land, but A1 severs 8 ha and A2 severs 10 ha.

A detailed evaluation was made of the amount of farmland removed from production as there is a considerable area of woodlot and marsh. The analysis showed that A3 would remove the greatest amount of actively farmed land, A1 was second followed closely by A2. Alignment A1 was the only alignment to require the removal of specialty crop lands, at 2.6 ha.

3.3 Agricultural Land Required for the Feasible Alignments

Table 3-2 shows the amount of farmland, by class, required for the feasible alignments.

The right-of-way for Highway 6 (New) is only 80 m in width. Generally, the MTC requires 100 m for a rural freeway. However, due to the importance of agricultural impacts, a narrower right-of-way was proposed to minimize the taking of agricultural lands.

TABLE 3-1
AGRICULTURAL FACTORS USED IN THE
EVALUATION OF THE BOOK ROAD CROSSING*

| | | A1 | A2 | A3 |
|---|---|----------------|----------------|----------------|
| Area of Class 1 to 3 Land by Class: | 1 | 3.4 ha | 1.8 ha | 2.2 ha |
| | 2 | 3.6 ha | 7.2 ha | 4.8 ha |
| | 3 | <u>20.1</u> ha | <u>18.1</u> ha | <u>20.1</u> ha |
| TOTAL | | 27.1 ha | 27.1 ha | 27.1 ha |
| Number of Farsteads Removed | | 0 | 0 | 0 |
| Number of Farms Affected | | 4 | 4 | 4 |
| Number of Farm Severances - landlocked parcels | | 0 | 0 | 0 |
| - new units | | 1 | 1 | 0 |
| Area of Active Farmland Removed from Production | | 5.6 ha | 5.1 ha | 6.7 ha |
| Area of Specialty Crop Land Affected | | 2.6 ha | 0 ha | 0 ha |

TABLE 3-2
AREA OF AGRICULTURAL LAND BY CLASS (ha)

| Agricultural Land | | Alternative Alignments | | | | | | |
|-------------------|---|------------------------|-----------|-----------|----------|----------|----------|----------|
| | | A | B | C | 1 | 2 | 3 | 4 |
| Class | 1 | 33 | 37 | 46 | 88 | 89 | 76 | 77 |
| | 2 | 9 | 12 | 10 | 8 | 3 | 12 | 9 |
| | 3 | <u>24</u> | <u>19</u> | <u>15</u> | <u>0</u> | <u>0</u> | <u>0</u> | <u>0</u> |
| TOTAL | | 66 | 68 | 71 | 96 | 92 | 88 | 86 |

* Applies to the area from midway between Highway 53 and Book Road to midway between Book Road at Butter Road.

NOTE: No other classes of land required.

TABLE 3-4
EFFECTS TO FARM OPERATIONS
ALIGNMENT B

| Total # of Farms Affected | Severances | | Farms From Which Land is Required But Not Severed | Farmsteads Removed |
|---------------------------------|----------------------------|---|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | |
| 12 | Dundana Homes (4 ha) | Davis Cranston In Trust (9 ha) (2 ha) | Freeland Developments Jerome Roman Catholic Diocese Hill Winegarden Smith Morris In Trust Cranston | Davis |

TABLE 3-5
EFFECTS TO FARM OPERATIONS
ALIGNMENT C

| Total # of Farms Affected | Severances | | Farms From Which Land is Required But Not Severed | Farmsteads Removed |
|---------------------------------|---|--------------------------------|--|-----------------------|
| | Landlocked Parcels (ha) | New Units | | |
| 17 | Dundana Homes (1.0 ha) Jerome (17 ha) Winegarden (6 ha) Fair (2 ha) Cranston (2 ha) Cranston (2 ha) | Cranston In Trust (2 ha) | Freeland Developments Roman Catholic Diocese Droogendyk Pottruff Ryckman Smith Jacob Schieber Jaslowski Granasiuk | Winegarden |

TABLE 3-6
EFFECTS TO FARM OPERATIONS
Alignment 1

| Total # of Farms Affected | Severances | | | Farms From Which Land Is Required But Not Severed | Farmsteads Removed |
|---------------------------------|--|--|--|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | | |
| 32 | *Fleming (3 ha) *Fleming (11 ha) McTear (15 ha) Palermo (8 ha) In Trust Benedict (1 ha) Smith (7 ha) | Varga (15 ha) Bates (15 ha) Varga (18 ha) Isbister (7 ha) In Trust | | Domtar Bothwright Whicher Thompson Whicher Sovereign Construction Dixon Vucicevic Leeming Lancia/Baldin in Trust Hevesi Varga Okimi Benedict Paletta Hotz Benedict Cianco Developments Jerome Pearce Isbister Whaley | 0 |
| | *Could be farmed in conjunction with adjacent operation | | | | |

TABLE 3-7
EFFECTS TO FARM OPERATIONS
Alignment 2

| Total # of Farms Affected | Severances | | | Farms From Which Land Is Required But Not Severed | Farmsteads Removed |
|---------------------------------|--|---|--|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | | |
| 31 | Leeming (20 ha) Bommarito (21 ha) Construction (2 ha) Palermo (2 ha) In Trust (6 ha) Benedict (7 ha) Smith | Hyslop (4 ha) Dixon (12 ha) Benedict (10 ha) Isbister (7 ha) In Trust | | Domtar Bothwright Whicher Thompson Whicher Sovereign Construction Cowie Fleming Fleming Howley McTear Kent Varga Bates Farnham Pearce Jerome Whaley Isbister Hotz Cianco Developments | Bates |
| | | | | | |

TABLE 3-8
EFFECTS TO FARM OPERATIONS
Alignment 3

| Total # of Farms Affected | Severances | | | Farms From Which Land Is Required But Not Severed | Farmsteads Removed |
|---------------------------------|---|---|---|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | | |
| 26 | Howley (20 ha) Leeming (3 ha) Pearce (2 ha) Isbister (7 ha) Smith | Schouten (10 ha) Sod Supply (2 ha) Dyke (23 ha) Whaley (4 ha) Riddell (7 ha) Isbister In Trust | Domtar Bothwright Whicher Thompson Whicher Sovereign Construction Cowie Fleming Fleming McQueen Killmann Pearce Whaley Hotz Ciamco Developments | | 0 |

TABLE 3-9
EFFECTS TO FARM OPERATIONS
Alignment 4

| Total # of Farms Affected | Severances | | | Farms From Which Land Is Required But Not Severed | Farmsteads Removed |
|---------------------------------|---|---|---|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | | |
| 18 | Cowie (21 ha) *Fleming (27 ha) Murray (24 ha) Scott (2 ha) | Howley (2 ha) Berry (28 ha) *Willemson (28 ha) | Domtar Bothwright Whicher Thompson Smith St. Elizabeth Home Society Killins Smith Isbister In Trust Hotz Ciamco Developments | | 0 |
| | *Could be farmed in conjunction with the adjacent operation | *Service road required | | | |

TABLE 3-10
SUMMARY OF RESPONSES TO AGRICULTURAL SURVEY
(Conducted at the First and Second Series of Public Information Centres)

| Name | Farm Area (ha) | | No. of Years in Operation | | Primary Farm Activity | | Machinery Movement | | Farm Related Comments |
|-------------|----------------|--------|---------------------------|----------|-----------------------|--------------------------|---|---|-----------------------|
| | Owned | Rented | Owned | Rented | | | | | |
| Bosherlight | 100 | 47 | 100 | 50 | 35 | Mixed Crop and Livestock | Along Caldera Road and Greens Rd. | Minimize loss of land | |
| Cowie | 200 | - | 190 | - | - | Mixed Crop and Livestock | Farms on opposite sides of Mines Rd. Machinery moves through the box. | Alternatives 2, 3 and 4 would require some lands at back of Lot 6, Con. 2. | |
| Murray | 100 | 70 | 100 | 19 | - | Cash Crop and Livestock | Along Mines Rd. | Alternative 4 would disrupt rear part of operation. | |
| Dixon | 100 | - | 90 | 49 | - | Cash Crop | Along Townline Rd. | Alternative 4 has least impact on farms. Under-considered the need for access along roadways. | |
| Bates | 88 | 88 | 171 | 36 | 11 | Sod Farm | Along Unity Rd. and Hwy. 6. | Alternative 1 would sever local position only by road. Alternative 2 would remove house. | |
| McTear | 98 | - | 86 | 20 | - | Cash Crop | Along Chippewa and White Church Rds. | Alternatives 2, 3 and 4 would have direct effect on farm operations. Alternative 1 would landlocked and no access to land unless access was provided. | |
| Howley | 160 | 15 | 150 | lifetime | 10 | Udary | Along Mines Rd. | Alternatives 3 and 4 would sever farm roads. | |
| Sanders | 18 | - | 16 | - | - | Cash Crop | None | | |
| Kruls | 35 | - | 30 | 13 | - | Sows | None. | | |
| Hyslop | 171 | - | - | - | - | Mixed Crop and Livestock | Along Townline Rd. | Needs access along townline Rd. | |
| Scott | 68 | - | 64 | 51 | - | Mixed Crop and Livestock | Along Chippewa Rd. | Alternative 4 would sever farm operations. | |
| Williamson | 100 | - | 86 | 15 | - | Sod Farm | Along Mines and Green Rds. | Alternative 4 would sever farm operations. | |
| Smith | 220 | - | 211 | lifetime | - | Mixed Crop and Livestock | Along Bush, Fidler's, Green and Butler Rds. | Alternative 4 causes the least disruption to the farm community. Highway 6 would be disrupted by the drainage. | |
| Layfield | - | 6 | 6 | - | 2 1/2 | Sheep | Along Butler and Fidler's Green Rd. | Alternatives 3 and 4 may require pasture lands. Noise are sensitive to noise. | |
| Ryckman | 102 | - | 87 | 40 | - | Cash Crop | Along Book Rd. | Necessary to have a bridge crossing Book Rd. | |
| Horsack | 40 | - | 36 | 60 | - | Cash Crop | Along Book Rd. and Southgate Rd. | Needs access along Book Rd. | |

The farming activities vary considerably with several mixed crops and livestock operations as well as some cash crop operations.

Considerable machinery movement was reported. Several farmers noted that they have more than one operation in the study area. From the general comments received, it is expected that effects to farm machinery movement would be effectively mitigated by providing grade separated intersections.

The respondents were obviously concerned with the loss of their farmland and in particular with landlocked parcels or irregularly shaped parcels. Again the need to provide access along the roadways within the community was noted.

3.5 Summary of Agricultural Impacts for the Feasible Alignments

Alignment A was selected for the section between Highway 53 and Glanaster Road. The reasons for its selection are documented in the Environmental Assessment Report. Alternative A takes the least amount of farm land, has the largest portion of Class 3 land, affects the least amount of specialty crop land, affects the least number of farms and is second in area of landlocked parcels created.

With respect to Alternatives 1, 2, 3 and 4, Alternative 1 was selected. Details of the evaluation process are documented in the Environmental Assessment Report. However, with respect to farm operations, the comparison of these alternatives is outlined below.

Alternative 4 affects only 18 farms. However, these are predominantly large, viable units. The severances created by Alternative 4 would result in the greatest area of landlocked

parcels and would be extremely disruptive to several large farms. The severances along Mines Road would tend to encourage urban development. Based on these considerations, Alternative 4 was found to be unacceptable, from an agricultural standpoint, by the Ministry of Agriculture and Food.

In comparing alignments 1, 2 and 3, Alternative 1 is the longest requiring 96 ha but the difference between Alternative 1 and Alternatives 2 and 3 is only 4 and 8 ha respectively. Alternative 3 affects 26 operations in total, whereas Alternatives 2 and 1 affect 31 and 32 respectively. Alternative 3 landlocks 41 ha, Alternative 2 landlocks 56 ha and alternative 1 landlocks 45 ha.

In comparing Alternatives 1, 2 and 3 the summary table shows little quantifiable difference among the three alternatives from an agricultural standpoint.

Alignment 3 creates several large severances south of Unity Road and severs one large farm unit south of Townline Road. However, the Fleming farm is in continuous ownership from Mines Road to Highway 6 (Existing). Alignment 2, although it most directly follows the lot lines, creates two severances at Townline Road and one large severance at White Church Road. It also requires the removal of a farmstead at White Church Road.

Alignment 1 severs several farms south of Unity Road. One farm, Fleming, is a continuous ownership from Mines Road to Highway 6 (Existing) and is also in the same ownership for the adjacent operation.

Of the two remaining severances, south of Unity Road, one farm, McTear, has a significant portion within designated hazard lands and the Varga farm has a significant portion within the urban area of the Unity Road Hamlet.

The severance north of Unity Road on the Bates farm is also partially within the urban designation for the Unity Road Hamlet. A large severance is created on the Varga farm on Townline Road. Another severance is created on the Palmero In Trust property on Chippewa Road, a large portion of this farm is also within designated hazard lands.

In summary, each of alignments 1, 2 and 3 sever some large farms, but Alignment 2 requires the removal of a farmstead, and most of the severances associated with Alignment 1 are within lands designated for urban use or as hazards lands.

4. AIRPORT ROAD ALIGNMENT

Once alignment A-1 was recommended, it was compared to a similar alignment referred to as A-1-A. Alignment A-1-A had the east-west portion of Highway 6 (New) along Airport Road rather than along the mid lot line between White Church Road and Airport Road. The alignment A-1-A was suggested by a member of the public at the first series of Public Information Centres.

The comparison between these two alternatives takes into consideration the entire study area from Highway 53 to Greens Road. The agricultural criteria are shown on Table 4-1.

The alternative along the mid lot line between White Church Road and Airport Road was recommended. The details of this evaluation are outlined in the Environmental Assessment Report. The impacts to agricultural lands were considered similar between the two alternatives. Alignment A-1-A removed one more farmstead, affected four fewer farms and landlocked one less farm with a landlocked area of 8 ha. Both alignments affected the same area of specialty crop land and created the same number of new units.

TABLE 4-1
AGRICULTURAL IMPACT COMPARISON
Alignment A-1 vs. A-1-A

| CRITERIA | A-1 | A-1-A |
|---|---------------------------------|---------------|
| Area of Class 1, 2, and 3 lands removed by class: | | |
| Class 1 | 121 ha | 121 ha |
| Class 2 | 17 ha | 17 ha |
| Class 3 | <u>24 ha</u> | <u>24 ha</u> |
| TOTAL | <u>162 ha</u> | <u>162 ha</u> |
| Number of Farmsteads Removed | 0 | 1 |
| Area of Specialty Crop Lands Affected | 3 ha | 3 ha |
| Number of Farms Affected | 42 | 38 |
| Number of Farm Severances | (landlocked 7 (new units 6 | 6 6 |
| Area of Landlocked Parcels | 52 ha | 44 ha |

5. THE RECOMMENDED ALIGNMENT

At this point in the evaluation process, alignment A-1 has been selected. The following sections will outline how this alignment was modified to produce the recommended alignment.

5.1 Book Road to Butter Road

South of Book Road, alignment A swings to the southeast, back to the lot line between the Morris In Trust and the Hill properties. This swing created some landlocked parcels, removed a farmstead at Butter Road, and fragmented a woodlot.

In order to minimize farm severances and fragmentation of the woodlot, the alignment was shifted to the southwest toward alignment B. This results in the recommended alignment paralleling the existing lot line for most of the distance between Book and Butter Roads.

The decision was made to provide the interchange for the existing airport terminal at Airport Road rather than at Butter Road. Thus, with no interchange at Butter Road, the recommended alignment could be shifted slightly to avoid all residences in the Butter Road area. The combined effect of this, from an agricultural perspective, was to minimize severances by paralleling the lot line between Lots 44 and 45 and avoid the taking of a farmstead.

5.2 White Church Road Area

Following the second series of Public Information Centres, concerns were raised by the Township of Glanbrook Council and local residents over the interchange at White Church Road.

In addition, Transport Canada requested that the interchange at Airport Road be aligned opposite the existing terminal access road.

In order to respond to these concerns, four alternative configurations were evaluated for the White Church Road interchange. The detailed comparison of these is presented in the Environmental Assessment Report.

Table 5-1 shows the agricultural impacts of each of the alternatives. Each alternative required almost exactly the same amount of farmland, none require any farmsteads and two affected 12 farms and two affected 13 farms. The area of landlocked lands ranged from 16 to 21 ha with the majority being common to all alternatives on the Palmero in Trust lands.

The major difference from an agricultural perspective is that schemes 1 and 4 create a new unit on Airport Road. This new unit is required to provide an access road from the Highway 6 (New) interchange to Airport Road directly opposite the existing Transport Canada terminal access road on the north side of Airport Road.

This new unit is created on the Jerome farm. The severance follows an existing fence line. The two parcels severed are currently farmed independently. However, the parcel created on the east side of the new roadway would be separated from the existing farm buildings located on the west side of the new access road. Access will be provided to the new unit along Airport Road.

**TABLE 5-1
EFFECTS TO FARM OPERATIONS
White Church Road Interchange Alternatives**

| FARMS AFFECTED | | SEVERANCES | | | LAND REQUIRED BUT NOT SEVERED | | FARMSTEADS |
|--|----|---|--|-------|-------------------------------|--|------------|
| | | Landlocked | New Units | | | | |
| SCHEME 1: Direct Ramps | 12 | Palermo In Trust { 9 ha } Smith { 5 ha } Benedict { 1 ha } Okimi { 3 ha } Whaley { 2 ha } | Isbister In Trust { 5 ha } Jerome { 20 ha } Hotz In Trust { 3 ha } | TOTAL | 28 ha | Paletta Benedict Cianco Dev. Woodley | 0 |
| | | TOTAL | 20 ha | TOTAL | 28 ha | | |
| SCHEME 2: Partial Diamond | 13 | Palermo In Trust { 10 ha } Smith { 5 ha } Benedict { 1 ha } | Isbister In Trust { 5 ha } | TOTAL | 5 ha | Okimi Paletta Benedict Hotz In Trust Cianco Dev. Jerome Whaley Pearce Isbister | 0 |
| | | TOTAL | 16 ha | TOTAL | 5 ha | | |
| SCHEME 3: Parcel at White Church Road | 13 | Palermo In Trust { 10 ha } Smith { 5 ha } Benedict { 1 ha } | Isbister In Trust { 5 ha } | TOTAL | 5 ha | Okimi Benedict Paletta Hotz In Trust Cianco Dev. Jerome Pearce Whaley Isbister | 0 |
| | | TOTAL | 16 ha | TOTAL | 5 ha | | |
| SCHEME 4: Trumpet South of White Church Road | 12 | Palermo In Trust { 10 ha } Benedict { 1 ha } Smith { 5 ha } Whaley { 2 ha } | Isbister In Trust { 5 ha } Jerome { 20 ha } Hotz In Trust { 3 ha } | TOTAL | 28 ha | Paletta Benedict Cianco Dev. Woodley Okimi | 0 |
| | | TOTAL | 18 ha | TOTAL | 28 ha | | |

5.3 Agricultural Effect of the Recommended Alignment

Table 5-2 summarizes the agricultural factors related to the recommended alignment. Tables 5-3 and 5-4 detail the effects to each operation. In total, 166 ha of land are required, 3 ha of which are specialty crop lands. No farmsteads are removed. A total of 42 farms are affected, with six land-locked parcels totalling 65 ha. Five new units are created. As mentioned previously, a significant portion of the land-locked and new units are within the designated urban area of Unity Road or within designated hazard lands.

TABLE 5-2
SUMMARY OF AGRICULTURAL EFFECTS
OF RECOMMENDED ALIGNMENT

| | | Hwy. 53 to Glancaster Rd. | Glancaster Rd. To Green's Rd. | Total Hwy. 53 To Green's Rd. |
|--|-------|---------------------------------|-------------------------------------|---------------------------------------|
| Area of Class 1, 2 and 3 lands removed (by class) | 1 | 26 ha | 98 ha | 124 ha |
| | 2 | 10 ha | 10 ha | 20 ha |
| | 3 | 22 ha | 0 ha | 22 ha |
| | TOTAL | 58 ha | 108 ha | 166 ha |
| Area of specialty crop lands affected | | 3 ha | 0 ha | 3 ha |
| Number of farmsteads removed | | 0 | 0 | 0 |
| Number of farms affected | | 11 | 31 | 42 |
| Number of farm severances | | | | |
| - landlocked parcels | | 3 | 3 | 6 |
| - new units | | 0 | 5 | 5 |
| Area of landlocked parcels | | 22 ha | 43 ha | 65 ha |

TABLE 5-3
EFFECTS TO FARM OPERATIONS
Recommended Alignment
from Highway 53 to Glancaster Road

| Total # of Farms Affected | Severances | | Farms From Which Land Is Required But Not Severed | Farmsteads Removed |
|---------------------------------|--|---|---|-----------------------|
| | Landlocked Parcels (ha) | New Units | | |
| 11 | Cranston In Trust Morris In Trust Hill (10 ha) (1 ha) (11 ha) | Cranston In Trust Davis Jerome (4 ha) (1.5 ha) (3 ha) | Smith Crownland Jerome Dundana Homes Freeland Development | 0 |

TABLE 5-4
EFFECTS TO FARM OPERATIONS
Recommended Alignment from Glanaster Road to Mines Road

| Total # of Farms Affected | Severances | | | Farms From Which Land is Required But Not Severed | Farmsteads Removed |
|---------------------------------|--|---|---|---|-----------------------|
| | Landlocked Parcels (ha) | | New Units | | |
| 31 | Fleming (3 ha) Fleming (11 ha) McTeer (15 ha) Palermo (8 ha) In Trust Benedict (1 ha) Smith (5 ha) | Varga (15 ha) Bates (15 ha) Varga (18 ha) Estate of (5 ha) Isbister | Domtar Bothwright Whicher Thompson Whicher Sovereign Construction Dixon Vucicevic Leeming Lancia/Baldwin In Trust Hevesi Varga Okimi Benedict Paletta Giamco Development Ltd. Hotz In Trust Jerome Whaley Pearce Isbister | 0 | |

APPENDIX H

Noise Reports

NOTE TO REVIEWERS

The information contained in this Appendix should be read in conjunction with Sections 4.3.5 and 6.3.1 in Part I of this assessment.

This Appendix contains two reports prepared by S.S. Wilson and Associates for this Study. Report W86-204 No. 1 includes details used in the route planning evaluation of noise impacts. Report W86-204 No. 2 (incorporating Revisions No. 1 and No. 2) includes on-site noise measurements (see Exhibit 4.3 for locations), and preliminary design evaluations, including expected impacts and evaluation of mitigating measures (barriers and/or berms). Additionally, interpretation of the route planning calculations is provided in the report "Route Planning Noise Evaluation", prepared by the MTC Central Region Environmental Unit.

It should be noted that route planning and preliminary design investigations incorporated different levels of detail. As well, these reports have been revised to remove consideration of noise contributed by the operation of the Hamilton Civic Airport, as requested by the Ministry of the Environment.

In addition to the information documented in these reports, the following was also used in the investigations:

NOTE: Use of "1996" Label For Traffic Predictions

Part I section 4.3.5 and Part II section 2 outline the use of a comprehensive model for the prediction of future traffic volumes in the Study Area. This modelling assumed the development of the Study Area under a "high growth" scenario to a mature state. As a result, the future traffic volumes used for noise predictions represent a conservative "worst case" scenario with maximum development of existing and planned developments.

As this growth is partially dependant upon the existence of the mature roadway system, these volumes would not be expected to occur until well after completion of the ultimate Highway 6 New undertaking. They are representative of conditions at least ten years after the construction of the ultimate facility.

It should be noted that these predictions do not allow the simple application of an annual "growth rate", for the purposes of extrapolating "ten years after construction" predictions from the base 1986 information. In this Appendix, and as outlined through the study, the label "1996" has been used to denote future "mature state" conditions. It does not indicate that these volumes are predicted explicitly for the year 1996.

- On-site Noise Measurements Weather Conditions:
 - wind speed less than 15 kph
 - no precipitation
 - considered to be reasonably representative
- Traffic and Noise Data for Existing Highway 6 south of the Airport:

| | 1986 | "1996" |
|-------------------------|--------|--------|
| • Data Year | 1986 | 1996 |
| • Total AADT | 11,400 | 15,100 |
| • Total Number of Lanes | 4 | 4 |
| • Percentage of Trucks | 10 | 10 |
| • Posted Speed (km/h) | 80 | 80 |
- Distance from E.O.P. for:

| Leq. (24) | 1024 | 1258 |
|-----------|------|------|
| 40 dBA | 447 | 549 |
| 45 dBA | 195 | 240 |
| 50 dBA | 85 | 104 |
| 55 dBA | 37 | 48 |
| 60 dBA | 16 | 20 |
| 65 dBA | 7 | 8 |
| 70 dBA | | |

S.S. WILSON AND ASSOCIATES
CONSULTING ENGINEERS
DIV. OF M.H.G. ENGINEERING INC.
Acoustics, Noise and Vibration Control

REPORT W86-204 NO. 1
NOISE ENVIRONMENT STUDY
FIG-WA-6 (NEW)
HAMILTON TO CALEDONIA

REPORT W86-204 NO. 1
NOISE ENVIRONMENT STUDY
FIG-WA-6 (NEW)
HAMILTON TO CALEDONIA

For: M.M. Dillon Limited
47 Sheppard Avenue East
Willowdale, Ontario
M2N 6H5

INDEX

| | <u>Page</u> |
|---------------------------|-------------|
| 1.0 Introduction | 1 |
| 2.0 Road Noise Level Data | 2 |

Appendix 1: Road, Traffic and Leq Noise Level Data

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March 10, 1986

1.0 INTRODUCTION

- 1.1 The services of S.S. Wilson & Associates were retained by M.M. Dillon Limited to update the noise environment study for proposed Highway 6 (New) Hamilton to Caledonia.
- 1.2 This report sets out noise level data for the existing roadways in the area and for Highway 6 (New).

2.0 ROAD NOISE LEVEL DATA

- 2.1 All noise level data are Leq 24 dBA calculated using the MTC Prediction Model.
- 2.2 The detailed data in Appendix 1 provides the computer readouts for each roadway giving the distance from edge of pavement to the 40 to 70 dBA contours in 5 dBA increments. The calculations take ground attenuation into consideration but do not include any adjustments for attenuation due to topography.
- Attenuation due to topography will be taken into account at potentially sensitive sites when analysis for the recommended alignment is carried out.
- 2.3 Table 1 sets out the distance from the centre line of the roadways to the 40 to 70 dBA contours. The "edge of pavement" data has been adjusted to centre line data by a factor of 3.5 m for each lane of traffic between the centre line and the edge of pavement of the roadway. This has been rounded to 4.0 m for a single lane.
- 2.4 Data provided by M.M. Dillon Limited for local roads was for 1980, 1981 and 1983 with a 10-year growth factor. These data were extrapolated (on the basis of the growth factor) to 1986 and 1996 for all roads. The predicted levels for local roads (in Table 1) are based on the 1986 and 1996 values.
- 2.5 The "future" data for Highway 6 (Existing) and Highway 6 (New) has been used as 1996 data in the Table.

DISTANCES (m) FROM ROAD CENTRE LINE TO NOISE LEVEL CONTOURS

| Roadway | 1986: Leq 24 (dBA) | | | | | 1986: Leq 25 (dBA) | | | | | | | | |
|----------------------------------|--------------------|-----|-----|----|----|--------------------|----|-------|-----|-----|-----|----|----|----|
| | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| Hwy. 6 (New) | | | | | | | | | | | | | | |
| - South of Airport Rd. | | | | | | | | 1,968 | 867 | 386 | 176 | 85 | 45 | 27 |
| - North of Airport Rd. | | | | | | | | 1,768 | 780 | 348 | 160 | 87 | 41 | 26 |
| Link Rd. - Hwy. 6 (Ex.) to (New) | | | | | | | | 723 | 319 | 143 | 66 | 33 | 18 | 11 |
| Hwy. 6 (Existing) | | | | | | | | 503 | 223 | 101 | 48 | 25 | 14 | - |
| Fiddlers Green Road | | | | | | | | | | | | | | |
| - Hwy. 403 to Hwy. 53 | 224 | 100 | 46 | 22 | 12 | - | - | 263 | 117 | 53 | 25 | 13 | - | - |
| - Hwy. 53 to Book Rd. | 190 | 85 | 39 | 19 | 10 | - | - | 233 | 104 | 47 | 23 | 12 | - | - |
| - Book Rd. to Butler Rd. | 190 | 85 | 39 | 19 | 10 | - | - | 233 | 104 | 47 | 23 | 12 | - | - |
| - Butler Rd. to Carluke Rd. | 171 | 77 | 35 | 17 | 10 | - | - | 190 | 85 | 39 | 19 | 10 | - | - |
| Glancaster Road | | | | | | | | | | | | | | |
| - Twenty Rd. to Dickenson | 135 | 60 | 28 | 14 | 8 | - | - | 144 | 65 | 30 | 15 | 9 | - | - |
| - Dickenson Rd. to Airport Rd. | 40 | 19 | 10 | - | - | - | - | 44 | 21 | 11 | - | - | - | - |
| - Airport Rd. to Whitechurch | 139 | 63 | 29 | 15 | 8 | - | - | 149 | 67 | 31 | 16 | 9 | - | - |
| - Whitechurch to Townline | 81 | 37 | 18 | 10 | - | - | - | 117 | 53 | 25 | 13 | 8 | - | - |
| Southcote Road | | | | | | | | | | | | | | |
| - Hwy. 403 to Book Rd. | 98 | 45 | 21 | 11 | - | - | - | 142 | 64 | 30 | 15 | 9 | - | - |
| - Book Rd. to Butler Rd. | 53 | 25 | 13 | 8 | - | - | - | 76 | 35 | 17 | 10 | - | - | - |
| Smith Road | | | | | | | | | | | | | | |
| - Hwy. 403 to Hwy. 53 | 19 | 10 | - | - | - | - | - | 31 | 15 | 9 | - | - | - | - |
| - Hwy. 53 to Book Rd. | 16 | 9 | - | - | - | - | - | 22 | 12 | - | - | - | - | - |
| - Book Rd. to Glancaster | 49 | 24 | 12 | - | - | - | - | 71 | 31 | 16 | 9 | - | - | - |
| Highway 53 | 682 | 300 | 133 | 60 | 28 | 14 | - | 752 | 332 | 149 | 69 | 34 | 18 | 12 |

TABLE 1 (Cont'd)

DISTANCE (m) FROM ROAD CENTRE LINE TO NOISE LEVEL CONTOURS

| Roadway | 1986: Leq 24 (dBA) | | | | | | | 1986: Leq 24 (dBA) | | | | | | |
|--------------------------------|--------------------|-----|-----|-----|----|----|----|--------------------|-------|-----|-----|-----|----|----|
| | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| Book Road | 42 | 20 | 11 | - | - | - | - | 60 | 28 | 14 | 8 | - | - | - |
| Butter Road | 42 | 20 | 11 | - | - | - | - | 60 | 28 | 14 | 8 | - | - | - |
| Airport Road | 161 | 73 | 34 | 17 | 9 | - | - | 105 | 83 | 38 | 19 | 10 | - | - |
| Whitechurch Road | | | | | | | | | | | | | | |
| - Hwy. 40 to Glancaster | 179 | 80 | 37 | 18 | 10 | - | - | 205 | 92 | 42 | 20 | 11 | - | - |
| - Glancaster to Fiddlers Green | 141 | 64 | 30 | 15 | 9 | - | - | 161 | 73 | 34 | 17 | 9 | - | - |
| Carluke Road | 141 | 64 | 30 | 15 | 9 | - | - | 161 | 73 | 34 | 17 | 9 | - | - |
| Leeming Road | 14 | 8 | - | - | - | - | - | 16 | 9 | - | - | - | - | - |
| Chippewa Road | | | | | | | | | | | | | | |
| - Hwy. 6 to Glancaster | 44 | 21 | 11 | - | - | - | - | 51 | 24 | 13 | - | - | - | - |
| Townline Road | | | | | | | | | | | | | | |
| - Hwy. 6 to Glancaster | 65 | 30 | 15 | 9 | - | - | - | 76 | 35 | 17 | 10 | - | - | - |
| - Glancaster to Carluke | 30 | 15 | 9 | - | - | - | - | 43 | 21 | 11 | - | - | - | - |
| Worsworthy Road | 18 | 10 | - | - | - | - | - | 25 | 13 | 8 | - | - | - | - |
| Unity Road | 66 | 31 | 15 | 9 | - | - | - | 87 | 40 | 19 | 10 | - | - | - |
| Highway 403 | 2,050 | 900 | 390 | 174 | 85 | 43 | 25 | 2,420 | 1,065 | 460 | 210 | 100 | 50 | 30 |

APPENDIX 1

(Report W86-204 No. 1)

NOISE ENVIRONMENT STUDY

A. GENERAL

1. All road and traffic data were provided by M.M. Dillon Limited.
2. Data provided for local roads was for 1960, 1981 and 1983 with a 10-year growth factor to 1990, 1991 and 1993. These data were extrapolated to 1986 and 1996 on the basis of the growth factor.
3. All noise levels are Leq (dBA) **24** and are calculated using the MTC Prediction Method.

B. PREDICTED NOISE LEVEL DATA

1. Detailed data are set out on the computer readouts for roads, traffic volumes and distances to the contours for 40 to 70 dBA in 5 dBA increments.
2. The computer data is for distance from edge of pavement to the noise level contour. This data is adjusted in the table in Section 2.0 for distance from the roadway centre line by adding 3.5 m for each lane of traffic between the centre line and the edge of pavement of the roadway. Where only 1 x lane was involved the adjustment was rounded to 4.0 m.
3. The computer readouts give 1986 and 1996 data for local roads. The future data for Highway 6 (Existing) and Highway 6 (New) and the Link Road between these roads were used as 1996 data.

PROJECT : HIGHWAY 6 (NEW)

ROAD : HWY 6 (NEW) - South of Airport Rd

DATA YEAR : 1996

TOTAL AADT: 13900
LANES : 8

% TRUCKS : 13
SPEED : 100 KPH

Data from M.M. Dillon Limited

| LEQ 24 (dBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 1954 |
| 45 | 853 |
| 50 | 372 |
| 55 | 162 |
| 60 | 71 |
| 65 | 31 |
| 70 | 13 |

PROJECT : HIGHWAY 6 (NEW)

ROAD : HWY 6 (NEW) - North of Airport Rd.

DATA YEAR : 1996

TOTAL AADT: 9000

LANES : 8

% TRUCKS : 24

SPEED : 100 KPH

Data from M.M. Dillon Limited.

LEO 24 (DBA)

DISTANCE FROM
E.O.P. (M)

40

1754

45

766

50

334

55

146

60

63

65

27

70

12

PROJECT : HIGHWAY 6 (NEW)

ROAD : LINK ROAD - Hwy 6 (E.) to Hwy 6 (New)

DATA YEAR : 1996

TOTAL AADT: 7000

LANES : 4

% TRUCKS : 10

SPEED : 80 KPH

Data from M.M. Dillon Limited

LEO 24 (DBA)

DISTANCE FROM
E.O.P. (M)

40

716

45

312

50

136

55

59

60

26

65

11

70

4

PROJECT : HIGHWAY 6 (NEW)

ROAD : HWY 6 (Existing) - Airport Rd to Greens Rd

DATA YEAR : 1996

TOTAL AADT: 5100

LANES : 4

% TRUCKS : 5

SPEED : 80 KPH

Data from M.M. Dillon.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 496 |
| 45 | 216 |
| 50 | 94 |
| 55 | 41 |
| 60 | 18 |
| 65 | 7 |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : FIDDLERS GREEN - Hwy 403 to Hwy 53

DATA YEAR : 1986

TOTAL AADT: 4240

LANES : 2

% TRUCKS : 4

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 220 |
| 45 | 96 |
| 50 | 42 |
| 55 | 18 |
| 60 | 8 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 5300

LANES : 2

% TRUCKS : 4

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 259 |
| 45 | 113 |
| 50 | 49 |
| 55 | 21 |
| 60 | 9 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : FIDDLERS GREEN ROAD - Hwy 53 to Eook Road.

DATA YEAR : 1986

TOTAL AADT: 1600 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 186 |
| 45 | 81 |
| 50 | 35 |
| 55 | 15 |
| 60 | 6 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 2120 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 229 |
| 45 | 100 |
| 50 | 43 |
| 55 | 19 |
| 60 | 8 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : FIDDLERS GREEN ROAD - Eook Rd to Butter Rd.

DATA YEAR : 1986

TOTAL AADT: 1600 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 186 |
| 45 | 81 |
| 50 | 35 |
| 55 | 15 |
| 60 | 6 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 2120 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 229 |
| 45 | 100 |
| 50 | 43 |
| 55 | 19 |
| 60 | 8 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : FIDDLERS GREEN ROAD - Butter Rd to Carlisle Rd.

DATA YEAR : 1986

TOTAL AADT: 1380 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 167 |
| 45 | 73 |
| 50 | 31 |
| 55 | 13 |
| 60 | 6 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1600 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 186 |
| 45 | 81 |
| 50 | 35 |
| 55 | 15 |
| 60 | 6 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : GLANCASTER ROAD - Twenty Rd to Discrenson Rd

DATA YEAR : 1986

TOTAL AADT: 1750 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 129 |
| 45 | 56 |
| 50 | 24 |
| 55 | 10 |
| 60 | 4 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1960 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 140 |
| 45 | 61 |
| 50 | 26 |
| 55 | 11 |
| 60 | 5 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : GLANCASTER RD - Dickenson Rd to Airport Road

DATA YEAR : 1986

TOTAL AADT: 310

LANES : 2

% TRUCKS : 1

SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 36 |
| 45 | 15 |
| 50 | 6 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 360

LANES : 2

% TRUCKS : 1

SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 40 |
| 45 | 17 |
| 50 | 7 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : GLANCASTER RD - Airport Rd to Whitechurch Rd

DATA YEAR : 1986

TOTAL AADT: 1030

LANES : 2

% TRUCKS : 1

SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 135 |
| 45 | 59 |
| 50 | 25 |
| 55 | 11 |
| 60 | 4 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1135

LANES : 2

% TRUCKS : 1

SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 145 |
| 45 | 63 |
| 50 | 27 |
| 55 | 12 |
| 60 | 5 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : GLANCASTER RD - Whitechurch Rd to Townline Rd.

DATA YEAR : 1986

TOTAL AADT: 480 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 77 |
| 45 | 33 |
| 50 | 14 |
| 55 | 6 |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 815 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 113 |
| 45 | 49 |
| 50 | 21 |
| 55 | 9 |
| 60 | 4 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : SUOTHCOTE RD - Hwy 403 to Book Rd.

DATA YEAR : 1986

TOTAL AADT: 1520 % TRUCKS : 1
LANES : 2 SPEED : 50 KPH

Data extrapolated from M.M. Dillon adat.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 94 |
| 45 | 41 |
| 50 | 17 |
| 55 | 7 |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 2580 % TRUCKS : 1
LANES : 2 SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 138 |
| 45 | 60 |
| 50 | 26 |
| 55 | 11 |
| 60 | 5 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : SOUTHCOTE RD - Book Rd to Butter Rd.

DATA YEAR : 1986

TOTAL AADT: 475 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 49 |
| 45 | 21 |
| 50 | 9 |
| 55 | 4 |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 800 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 72 |
| 45 | 31 |
| 50 | 13 |
| 55 | 6 |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : SMITH ROAD - Hwy 403 to Hwy 53

DATA YEAR : 1986

TOTAL AADT: 130 % TRUCKS : 1
LANES : 2 SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 15 |
| 45 | 6 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 280 % TRUCKS : 1
LANES : 2 SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 27 |
| 45 | 11 |
| 50 | 5 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : SMITH ROAD - Hwy 53 to Book Rd.

DATA YEAR : 1986

TOTAL AADT: 100

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEG 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 12 |
| 45 | 5 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 170

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEG 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 18 |
| 45 | 8 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : SMITH ROAD - Book Rd to Glancaster Rd

DATA YEAR : 1986

TOTAL AADT: 570

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEG 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 45 |
| 45 | 20 |
| 50 | 8 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 970

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEG 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 67 |
| 45 | 29 |
| 50 | 12 |
| 55 | 5 |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : Highway 53

DATA YEAR : 1986

TOTAL AADT: 10800

LANES : 2

% TRUCKS : 12.5

SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 678 |
| 45 | 296 |
| 50 | 129 |
| 55 | 56 |
| 60 | 24 |
| 65 | 10 |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 12275

LANES : 4

% TRUCKS : 12.5

SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 745 |
| 45 | 325 |
| 50 | 142 |
| 55 | 62 |
| 60 | 27 |
| 65 | 11 |
| 70 | 5 |

PROJECT : HIGHWAY 6 (NEW)

ROAD : BOOK ROAD

DATA YEAR : 1986

TOTAL AADT: 450

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 38 |
| 45 | 16 |
| 50 | 7 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 765

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LED 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 56 |
| 45 | 24 |
| 50 | 10 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : BUTTER ROAD

DATA YEAR : 1986

TOTAL AADT: 450
LANES : 2

% TRUCKS : 1
SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 38 |
| 45 | 16 |
| 50 | 7 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 765
LANES : 2

% TRUCKS : 1
SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 56 |
| 45 | 24 |
| 50 | 10 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : AIRPORT ROAD

DATA YEAR : 1986

TOTAL AADT: 1275
LANES : 2

% TRUCKS : 1
SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 157 |
| 45 | 69 |
| 50 | 30 |
| 55 | 13 |
| 60 | 5 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1540
LANES : 2

% TRUCKS : 1
SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 181 |
| 45 | 79 |
| 50 | 34 |
| 55 | 15 |
| 60 | 6 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : WHITECHURCH RD - Hwy 6 to Glancaster Rd

DATA YEAR : 1986

TOTAL AADT: 2650 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 175 |
| 45 | 76 |
| 50 | 33 |
| 55 | 14 |
| 60 | 6 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 3200 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 201 |
| 45 | 80 |
| 50 | 37 |
| 55 | 16 |
| 60 | 7 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : WHITECHURCH RD - Glancaster Rd to Fiddlers Green

DATA YEAR : 1986

TOTAL AADT: 1060 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 137 |
| 45 | 60 |
| 50 | 26 |
| 55 | 11 |
| 60 | 5 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1275 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 157 |
| 45 | 69 |
| 50 | 30 |
| 55 | 13 |
| 60 | 5 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : CARLUKE ROAD

DATA YEAR : 1986

TOTAL AADT: 1060 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 137 |
| 45 | 60 |
| 50 | 26 |
| 55 | 11 |
| 60 | 5 |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 1275 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 157 |
| 45 | 69 |
| 50 | 30 |
| 55 | 13 |
| 60 | 5 |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : LEEHING ROAD

DATA YEAR : 1986

TOTAL AADT: 60 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 10 |
| 45 | 4 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 75 % TRUCKS : 1
LANES : 2 SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 12 |
| 45 | 5 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : CHIFFEWA RD - Hwy 6 to Glancaster Rd

DATA YEAR : 1986

TOTAL AADT: 200 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 40 |
| 45 | 17 |
| 50 | 7 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 250 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 47 |
| 45 | 20 |
| 50 | 9 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : TOWNLINE RD - Hwy 6 to Glancaster Rd

DATA YEAR : 1986

TOTAL AADT: 350 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 61 |
| 45 | 26 |
| 50 | 11 |
| 55 | 5 |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 440 % TRUCKS : 1
LANES : 2 SPEED : 80 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 72 |
| 45 | 31 |
| 50 | 13 |
| 55 | 6 |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 8 (NEW)

ROAD : TOWNLINE RD - Glancaster Rd to Carlisle Rd

DATA YEAR : 1986

TOTAL AADT: 275

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 26 |
| 45 | 11 |
| 50 | 5 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 460

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 39 |
| 45 | 17 |
| 50 | 7 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : WORKSWORTHY ROAD

DATA YEAR : 1986

TOTAL AADT: 120

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 14 |
| 45 | 6 |
| 50 | |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

DATA YEAR : 1996

TOTAL AADT: 200

LANES : 2

% TRUCKS : 1

SPEED : 50 KPH

Data extrapolated from M.M. Dillon data.

| LEQ 24 (DBA) | DISTANCE FROM E.O.P. (M) |
|--------------|-----------------------------|
| 40 | 21 |
| 45 | 9 |
| 50 | 4 |
| 55 | |
| 60 | |
| 65 | |
| 70 | |

PROJECT : HIGHWAY 6 (NEW)

ROAD : UNITY ROAD

DATA YEAR : 1986

TOTAL AADT: 650

LANES : 2

% TRUCKS : 1

SPEED : 60 KPH

Data Extrapolated from M.M. Dillon data.

LEQ 24 (DBA)

DISTANCE FROM
E.O.P. (M)

40

62

45

27

50

11

55

5

60

65

70

HIGHWAY 6 (NEW)

HAMILTON TO CALEDONIA

W.P. 36-84-00

ROUTE PLANNING NOISE EVALUATION

DATA YEAR : 1996

TOTAL AADT: 960

LANES : 2

% TRUCKS : 1

SPEED : 60 KPH

Data extrapolated from M.M. Dillon data.

LEQ 24 (DBA)

DISTANCE FROM
E.O.P. (M)

40

83

45

36

50

15

55

6

60

65

70

1986

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS

CENTRAL REGION, PLANNING & DESIGN SECTION

A. Jay Nuttall
Environmental Planner

(Revised 11/1986)

HIGHWAY 6 (NEW)
HAMILTON TO CALEDONIA
W.P. 36-84-00

CONTENTS

| | |
|--|----|
| Title Page | |
| Contents | |
| 1.0 Introduction | 1 |
| 2.0 Procedure Followed | 2 |
| 3.0 Noise Tables | 6 |
| 3.1 Alternatives Investigated | 6 |
| 3.2 Interpretation of Tables | 8 |
| 3.3 Analysis | 9 |
| 3.4 Analysis Without Airport-related Noise | 10 |
| Appendix I Noise Tables | 12 |

ROUTE PLANNING NOISE EVALUATION

1.0 INTRODUCTION

This evaluation has been undertaken as part of the environmental assessment associated with W.P. 36-84-00. It follows from, and is based on, the results of earlier noise evaluations undertaken for the study by S. S. Wilson and Associates as presented in Report W86-204, No. 1 ("Noise Environment Study Highway 6 (New) Hamilton to Caledonia", March, 1986) and later reports.

This evaluation also includes five (5) air photo mosaics at a 1:10,000 scale. These indicate:

- a) site numbers for each residence affected by an alternative;
- b) decibel contours for each alternative, including local road-generated contours; and
- c) decibel contours for the finally recommended route, including connecting links.

They may be inspected at the M.T.C. Central Region Planning and Design offices.

This evaluation provides the results of the investigation of noise as a factor in the route selection phase of the Highway 6 (New) study. It does not include specific reference to individual sites which may experience potentially significant noise impacts. Neither does it provide consideration of mitigation. Specific impacts and consideration of mitigation are dealt with in another report.

This evaluation report has been revised to reflect the current situation regarding the inclusion in ambient conditions of noise generated from aircraft as a result of the presence of Hamilton Civic Airport within the Study Area.

M.T.C.'s position is that noise from aircraft near airports should be included as a component of ambient conditions (per definition of ambient, draft National Environmental Noise Code). The inclusion of such noise has been removed from the analysis of noise within the Study Area, on request of the Ministry of the Environment.

2.0 PROCEDURE FOLLOWED

The existing "Noise Protocol" between M.O.E. and M.T.C. provides a basis for comparing noise impacts of various alternatives in the environmental assessment process. The amount of increase and the actual levels of noise as a result of the alternative alignments are the basis for this comparison.

The Protocol indicates that an increase of more than 5 decibels (dBA) over the "ambient" is grounds for considering possible mitigation. This "significant" impact may occur for any residential receiver, regardless of possible low actual noise levels. The Protocol also indicates that 55 dBA is a provincial objective for noise levels resulting from new highways. Reduction of actual noise levels to or below this level is an objective.

Based on these levels, noise impact tables have been compiled at a route planning level of detail, to indicate the relative magnitude of impacts for each alternative. The Protocol suggests that both the extent of amounts of increase and of actual noise levels may be determined by drawing noise contours at 5 dBA intervals on maps and counting the numbers of residences between each contour. Comparison of "ambient" conditions and impacts resulting from the presence of the alternative could be made by means of these numbers of residences.

Report W86-204 No. 1 provides distances from the centre-lines of various highways and roads for "future" Leq(24) noise levels of 45, 50, 55, 60, 65, and 70 dBA. Among the various assumptions apparent in these measurements are those of a "flat surface" and of no shadowing by intervening structures or topography.

Noise tables were produced for "future" conditions which indicate the noise levels produced as a result of the presence of the alternative, and the amount of increase over the ambient condition. The (future)

"ambient" condition was determined to be the predicted noise level at a receiver site, based on future volumes of traffic on existing local roads, without the Highway 6 (New) alternative in place. In cases where this level was below 45 dBA, an assumption was made that local ambient conditions (consisting of all noise sources in the environment) resulted in a minimum noise level of 45 dBA.

In order to determine individual noise levels, the 5 dBA contours identified in Report W86-204 No. 1 were plotted to scale and single dBA measures interpolated. When scaled against each residence's location, it was possible to determine both the major future ambient noise source from each adjacent roadway as well as the predicted noise level from an alternative, to the closest decibel.

Because of the logarithmic nature of dBA measurements, the addition of noise levels from two sources can complicate the resultant situation. Where the ambient and alternative values are too far apart (i.e. 6 dBA), the higher value dominates in the addition of the two noise levels. Where the difference is closer, the resultant noise level is determined by their logarithmic addition or, generally:

| <u>Difference (dBA)</u> | <u>Resultant Increase (add to higher of ambient or alternative)</u> |
|-----------------------------|---|
| 0 - 1 | 3 dBA |
| 2 - 3 | 2 dBA |
| 4 - 6 | 1 dBA |

The following examples indicate how the resultant values were obtained at each receiver:

| <u>Ambient (dBA)</u> | <u>Alternative (dBA)</u> | <u>Resultant (dBA)</u> | <u>Increase over Ambient (due to presence of alternative)</u> |
|--------------------------|------------------------------|----------------------------|---|
| 50 | 58 | 58 | 8 |
| 58 | 50 | 58 | None |
| 50 | 50 | 53 (+3) | 3 |
| 52 | 50 | 54 (+2) | 2 |
| 50 | 54 | 55 (+1) | 5 |
| 54 | 50 | 55 (+1) | 1 |

Additionally, assumptions have been required to estimate noise levels along several road locations. A worst case basis was assumed for volumes produced by an alternative, even though these may be considered unrealistically large. Report W86-204 No. 1 does not provide distances from centrelines for noise contours for Mines Road, the Airport link, or for individual ramps of the interchange at Highway 403. Mines Road was given the same values of traffic volumes and thus, contours, as Glanaster Road immediately to the north. The Airport links were given the same values as the Highway 6 (New) - 6 (existing) link roadway. Individual ramps at the Highway 403 interchange were assumed to have 50 percent of the total traffic volumes and thus a 3 dBA decrease from the noise levels produced by the total traffic volume.

Finally, the noise tables were compiled for residences which were within 600 m of the alignment centreline and which experienced a

resultant level greater than the ambient. Residences not experiencing an increase due to the presence of the alternative were not included.

3.0 NOISE TABLES

3.1 Alternatives Investigated

Tables showing the numbers of residences experiencing increases in noise levels were prepared, based on "future" conditions. These tables are presented in Appendix I.

Initial considerations dealt only with the route planning alternative alignments as outlined by the study. This level of detail allows comparison of alternatives, but because minor shifts in the alignment would be possible during consideration, the noise tables provide only a basis for comparison.

Between Highway #403 and Glanaster Road, three alternative alignments "A", "B" and "C", were considered. Modifications to "A" occurred and "A (modified)" was eventually adopted as the "Recommended" alignment in this area.

South of Glanaster to the Caledonia By-pass, alternatives "1", "2", "3" and "4" were investigated. All alternatives initially followed the mid-concession line between Airport and Whitechurch Roads. The identification of a pipeline in this location

resulted in the shifting of the alignments in this area slightly northward. As well, alternative "1" initially followed the lot line where it crossed Whitechurch Road. A shift slightly to the west in this location was made because of the close proximity of residences along Whitechurch Road. As a result, these were investigated as "1 (initial)" and "1 (modified)". Alternative "1 (modified)", north of the pipeline, was eventually adopted as the recommended alignment in this area.

During the route selection process, initial investigations considered interchange areas at Book, Butter, Glanaster, Whitechurch and Green's Roads. From a noise perspective, the existence of an interchange at this level of detail would have no effect on the noise impacts to nearby receivers. Receivers within the interchange areas would require removal if the alternative were adopted but the noise impacts were included for all such residences. Only one residence at Highway 53, within an existing designation was not included in the noise tables. It has been purchased by M.T.C. on a hardship basis.

The adoption of the recommended alignments led to the investigation of other connections to provide airport and Highway 6 (existing) connections. North of Glanaster Road, these were accounted for in alternative "A (modified)". South of Glanaster Road, these consisted of the basic recommended alignment with an east and west connection to the Airport, and a connecting link road between Highway 6 (New) and Highway 6 (existing) located

either north or south of Whitechurch Road. As a result, the possible combinations of connections included: north and west, south and west, and, south and east. (A north and east combination was not feasible due to space restrictions for ramps). Finally, a possible alternative suggested by a member of the public at an Information Centre was investigated in relation to the recommended alignments. It consisted of an alignment following Airport Road connecting southward to connect to alternative "1 (modified)".

3.2 Interpretation of Tables

Noise tables for each of the various alternatives are included in Appendix I. Based on "future" calculated noise levels, the tables indicate the numbers of residences located within 600 m of the centreline which experience some increase in noise levels above the ambient as a result of the alternative.

There are three major aspects of these tables which may be used for comparisons:

- a) numbers of residences experiencing more than 5 dBA increases over the ambient;
- b) numbers of residences having a resultant level over 55 dBA; and,
- c) numbers of residences experiencing any increase in noise levels over the ambient.

Increases of more than 5 dBA over the ambient must be regarded as the most important of the three. Such increases have the potential to occur at any resultant noise level and the effect is an audible increase over the ambient conditions. When (a) is equivalent between alternatives, then the numbers of residences over 55 dBA may be considered. Although a 55 dBA level is considered as a provincial objective, this value should be treated with caution as potential exists for residences receiving over 55 dBA as a result of the alternatives to have experienced over 55 dBA without the alternative. Finally, if both (a) and (b) are equivalent between alternatives, then the numbers of residences receiving any increase may be used for comparison.

The noise tables should be used only as a basis for determining noise impacts for route alternative and planning levels of consideration. They cannot be relied upon for determining the exact extent of impacts for a recommended alignment at a preliminary design level of detail. A more detailed analysis of sensitive areas along the recommended alignment is required at the preliminary design phase of the study.

3.3 Analysis

This report provides an analysis of noise impacts in which "ambient" is defined as the future noise levels calculated without the existence of a Highway 6 (New) alternative, resulting from local road noise sources.

Table 1 provides a summary of the major aspects of the noise tables. The actual noise tables are presented in Appendix I.

3.4 Analysis (Table 1)

Between alternatives "A", "B" and "C", alternative "B" produces the fewest impacts. "A" and "B" are similar in the extent of impacts but "C" provides the most impacts in all aspects. "A (altered)" reduces the numbers of residences experiencing over 5 dBA to fewer than "A", "B", or "C" and is, from a noise perspective, the best alternative.

Among alternatives "1 (initial)", "1 (modified)", "2", "3" and "4", alternative "4" produces the fewest significant noise impacts, even though more residences experience some increases. "1 (modified)" provides the next fewest impacts. Alternatives "1 (initial)", "3" and "2" provide increasingly more impacts. From the perspective of noise, alternative "4" is the most preferable.

Among the recommended alignment variations, that with the south and east connections provides the fewest impacts. While the north and west combination provides the most (although, it produces the lowest impacts of all aspects if the numbers of residences receiving over 5 dBA increases are considered similar enough).

The Airport Road alternative produces more impacts than any of the recommended alignments. From a noise perspective, the recommended alignment with south and east connections is preferable.

Based on this investigation, the recommended alignment with the fewest impacts to the noise environment would consist of "A (altered)" and the recommended alignment with south and east connections.

TABLE 1

SUMMARY OF NOISE TABLE RESULTS

(Airport Noise Source Not Included)

| <u>Alternative Considered</u> | <u>Numbers of Residences Experiencing:</u> | | |
|-----------------------------------|--|---------------|---------------------|
| | <u>5 dBA Increase</u> | <u>55 dBA</u> | <u>Any Increase</u> |
| A | 12 | 17 | 47 |
| B | 12 | 15 | 41 |
| C | 14 | 16 | 61 |
| A (altered) | | | |
| Recommended | 11 | 16 | 44 |
| 1 (initial) | 32 | 19 | 83 |
| 1 (modified) | 30 | 13 | 81 |
| 2 | 45 | 23 | 65 |
| 3 | 40 | 18 | 76 |
| 4 | 19 | 7 | 91 |
| Recommended Alignments: | | | |
| North & West | 32 | 18 | 85 |
| South & West | 31 | 30 | 93 |
| South & East | 30 | 30 | 92 |
| Airport Road | 34 | 7 | 67 |

Note:

North and South refers to Highway 6 (New), Highway 6 existing link north and south of White Church Road respectively; East and West refers to Highway 6 (New) - Airport Connections; West refers to an alignment along lots 2 and 3 boundary and East refers to an alignment along lots 3 and 4 boundary.

APPENDIX I

Noise Impact Tables for: Alternative Alignments

Recommended Alignments with
Connecting Links

Alternative: A

| Without Airport Noise Source | | | | | | |
|------------------------------|-----------------------------|------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | | TOTALS |
| | | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | | |
| +65-70 | | | | 1 | 1 | 1 |
| +60-65 | | 5 | 2 | 1 | 1 | 8 |
| +55-60 | | 5 | | 3 | | 8 |
| +50-55 | | 16 | 5 | | | 21 |
| 45-50 | | 9 | | | | 9 |
| TOTALS | | 35 | 7 | 3 | 2 | 47 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: B

| Without Airport Noise Source | | | | | | |
|------------------------------|-----------------------------|------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | | TOTALS |
| | | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | | |
| +65-70 | | | | 1 | 2 | 3 |
| +60-65 | | 5 | 2 | | | 7 |
| +55-60 | | 5 | | | | 5 |
| +50-55 | | 15 | 7 | | | 22 |
| 45-50 | | 4 | | | | 4 |
| TOTALS | | 29 | 9 | 1 | 2 | 41 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: C

| Without Airport Noise Source | | | | | | |
|------------------------------|-----------------------------|------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | | TOTALS |
| | | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | | |
| +65-70 | | | | | | |
| +60-65 | | 5 | 2 | | 1 | 8 |
| +55-60 | | 7 | | 1 | | 8 |
| +50-55 | | 35 | 10 | | | 41 |
| 45-50 | | 4 | | | | 4 |
| TOTALS | | 47 | 12 | 1 | 1 | 61 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: A (altered) = Recommended

| Without Airport Noise Source | | | | | | |
|------------------------------|-----------------------------|------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | | TOTALS |
| | | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | | |
| +65-70 | | | | | | |
| +60-65 | | 5 | 2 | | | 7 |
| +55-60 | | 5 | | 4 | | 9 |
| +50-55 | | 15 | 5 | | | 20 |
| 45-50 | | 8 | | | | 8 |
| TOTALS | | 33 | 7 | 4 | | 44 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: 1 (initial), North of Pipeline
Without Airport Noise Source

| | | Increase over Ambient (dBA) | | | |
|--------------------------------|--------|--------------------------------|------|-------|-----|
| | | +0-5 | 6-10 | 11-15 | +15 |
| | TOTALS | | | | |
| Resultant Noise Level (dBA) | +70 | | | | |
| | +65-70 | | | | 1 |
| | +60-65 | | 1 | 1 | 2 |
| | +55-60 | | 12 | 3 | 1 |
| | +50-55 | 22 | 25 | | 47 |
| | 45-50 | 17 | | | 17 |
| | TOTALS | 51 | 29 | 2 | 1 |
| | | | | | 83 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: 1 (modified), North of Pipeline
Without Airport Noise Source

| | | Increase over Ambient (dBA) | | | |
|--------------------------------|--------|--------------------------------|------|-------|-----|
| | | +0-5 | 6-10 | 11-15 | +15 |
| | TOTALS | | | | |
| Resultant Noise Level (dBA) | +70 | | | | |
| | +65-70 | | | | 2 |
| | +60-65 | | | | |
| | +55-60 | 8 | 3 | | 11 |
| | +50-55 | 26 | 25 | | 51 |
| | 45-50 | 17 | | | 17 |
| | TOTALS | 51 | 28 | 2 | 81 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: 2, North of Pipeline
Without Airport Noise Source

| | | Increase over Ambient (dBA) | | | |
|--------------------------------|--------|--------------------------------|------|-------|-----|
| | | +0-5 | 6-10 | 11-15 | +15 |
| | TOTALS | | | | |
| Resultant Noise Level (dBA) | +70 | | | | |
| | +65-70 | | | | 4 |
| | +60-65 | | | 1 | 6 |
| | +55-60 | 2 | 4 | 6 | 12 |
| | +50-55 | 12 | 25 | | 37 |
| | 45-50 | 5 | | | 5 |
| | TOTALS | 19 | 29 | 7 | 10 |
| | | | | | 65 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: 3, North of Pipeline
Without Airport Noise Source

| | | Increase over Ambient (dBA) | | | |
|--------------------------------|--------|--------------------------------|------|-------|-----|
| | | +0-5 | 6-10 | 11-15 | +15 |
| | TOTALS | | | | |
| Resultant Noise Level (dBA) | +70 | | | | |
| | +65-70 | | | 2 | 3 |
| | +60-65 | | | 1 | 1 |
| | +55-60 | 1 | 5 | 4 | 10 |
| | +50-55 | 27 | 23 | 1 | 51 |
| | 45-50 | 8 | | | 8 |
| | TOTALS | 36 | 28 | 8 | 4 |
| | | | | | 76 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: 4, North of Airport

Without Airport Noise Source

| | Increase over Ambient (dBA) | | | | TOTALS |
|--------|-----------------------------|------|-------|-----|--------|
| | +0-5 | 6-10 | 11-15 | +15 | |
| 170 | | | | | |
| 165-70 | | | | 2 | 2 |
| 160-65 | | | 1 | | 1 |
| 155-60 | 1 | | 3 | | 4 |
| 150-55 | 69 | 13 | | | 82 |
| 45-50 | 2 | | | | 2 |
| TOTALS | 72 | 13 | 4 | 2 | 91 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: Recommended, North & West Links

Without Airport Noise Source

| | Increase over Ambient (dBA) | | | | TOTALS |
|--------|-----------------------------|------|-------|-----|--------|
| | +0-5 | 6-10 | 11-15 | +15 | |
| 170 | | | | | |
| 165-70 | | | | 2 | 2 |
| 160-65 | | 1 | | | 1 |
| 155-60 | 10 | 5 | | | 15 |
| 150-55 | 27 | 24 | | | 51 |
| 45-50 | 16 | | | | 16 |
| TOTALS | 53 | 30 | | 2 | 85 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: Recommended, South & West Links

Without Airport Noise Source

| | Increase over Ambient (dBA) | | | | TOTALS |
|--------|-----------------------------|------|-------|-----|--------|
| | +0-5 | 6-10 | 11-15 | +15 | |
| 170 | | | | | |
| 165-70 | | | | 2 | 2 |
| 160-65 | | | | | 3 |
| 155-60 | 20 | 4 | 1 | | 25 |
| 150-55 | 23 | 24 | | | 47 |
| 45-50 | 16 | | | | 16 |
| TOTALS | 62 | 28 | 1 | 2 | 93 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: Recommended, South & East Links

| Without Airport Noise Source | | | | | |
|------------------------------|-----------------------------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | TOTALS |
| | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | |
| +65-70 | | | | 2 | 2 |
| +60-65 | 3 | | | | 3 |
| +55-60 | 20 | 4 | 1 | | 25 |
| +50-55 | 23 | 23 | | | 46 |
| 45-50 | 16 | | | | 16 |
| TOTALS | 62 | 27 | 1 | 2 | 92 |

Number of Residences
(Based on Future Predicted Noise Levels)

Alternative: Airport Road Alignment

| Without Airport Noise Source | | | | | |
|------------------------------|-----------------------------|------|-------|-----|--------|
| | Increase over Ambient (dBA) | | | | TOTALS |
| | +0-5 | 6-10 | 11-15 | +15 | |
| +70 | | | | | |
| +65-70 | | | 1 | 2 | 3 |
| +60-65 | | | 1 | | 1 |
| +55-60 | 1 | 2 | | | 3 |
| +50-55 | 15 | 24 | 4 | | 43 |
| 45-50 | 17 | | | | 17 |
| TOTALS | 33 | 26 | 6 | 2 | 67 |

Number of Residences
(Based on Future Predicted Noise Levels)
(Airport Alignment connects from "A (Altered)" using Airport Road to the East Link, and then southerly into the "1 (modified)" alignment)

S.S. WILSON AND ASSOCIATES
CONSULTING ENGINEERS
DIV. OF M.H.G. ENGINEERING INC.
Acoustics, Noise and Vibration Control

S.S. WILSON AND ASSOCIATES

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REVISION 1

REPORT W86-204, NO. 2

NOISE ENVIRONMENT STUDY

HIGHWAY 6 (NEW)

HAMILTON TO CALEDONIA

For: M. M. Dillon Limited
47 Sheppard Avenue East
Willowdale, Ontario
M2N 2Z8

REVISION 2

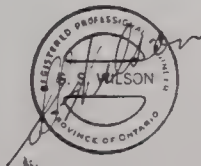
REPORT W86-204, NO. 2

NOISE ENVIRONMENT STUDY

HIGHWAY 6 (NEW)

HAMILTON TO CALEDONIA

For: M.M. Dillon Limited
47 Sheppard Avenue East
Willowdale, Ontario
M2N 2Z8



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Sept. 15, 1986

S.S.W. & A.

October 1, 1986

REVISION 2

REPORT W86-204, NO. 2

NOISE ENVIRONMENT STUDY

HIGHWAY 6 (NEW)

HAMILTON TO CALEDONIA

INDEX

| | <u>Page</u> |
|---|-------------|
| 1.0 Introduction | 1 |
| 2.0 Noise Level Data | 2 |
| 3.0 Mitigation Measures | 4 |
| Appendix 1: On Site Noise Level Measurements | |
| Appendix 2: Attenuation Data - Barriers, Cuts | |

1.0 INTRODUCTION

- 1.1 The services of S.S. Wilson & Associates were retained by M.M. Dillon Limited to update the noise environment study for Highway 6 (New), Hamilton to Caledonia.
- 1.2 This study covers the recommended alignment from Highway 403 to the Bypass.
- 1.3 Report W86-204, No. 1 set out the Leq noise levels for existing roadways in the area and for Highway 6 (New). The report provided data on the distance from roadway centre line to the Leq contours from 40 dBA to 70 dBA in 5 dBA increments.
- 1.4 This Report W86-204, No. 2 Revision 2 provides data on the NEF (Leq dBA) contours for Hamilton Airport, data on noise level measurements made on site to check existing ambient conditions, analyses of impact based on future (approximately 1996) road conditions and examines possible mitigation measures at potentially sensitive locations.
- 1.5 The drawing included with this Report shows the recommended alignment, the NEF contours for Hamilton Airport and the noise level data measured on site.
- 1.6 Distances and elevations used in this Revised Report are taken from the "marked" 1:2000 drawings provided by MTC on September 3, 1986 and the Profile drawings received from M.M. Dillon on August 27, 1986.
- 1.7 All noise level data in this Report are Leq (dBA) over a 24-hour period (i.e. Leq 24).

2.0 NOISE LEVEL DATA

2.1 EXISTING NOISE LEVELS

1. On site measurements were carried out at 8 x locations to assess currently existing noise levels. The detailed data is set out in Appendix 1.
2. Calculated data for each of the local roadways for current traffic conditions were set out in Report W86-204, No. 1.
3. The measured data correlates reasonably well with the calculated current levels at the test locations.
4. Ambient noise levels used in this Report are future (1996) noise levels without Highway 6 (New). The levels are derived from Report W86-204 No. 1 and agree with the levels set out in the report "Route Planning Noise Evaluation" 1986, MTC, Central Region, Planning and Design Section (A. Jay Muttall, Environmental Planner). In this Revised Report the aircraft noise levels (NEF contours) from Hamilton Airport are not included in the ambient noise levels.

2.2 NOISE PROTOCOL

1. Noise impact has been assessed on the basis of the agreement of February 1986 between the Ministry of Transportation and Communications and the Ministry of the Environment.
2. In this Report mitigation has been considered where the addition of noise generated by Highway 6 (New) to the existing ambient will result in a change in noise level of more than 5 dBA.

Data is provided for reduction of noise levels (from Highway 6 (New) to levels equal to the ambient, for reduction of total noise levels (i.e. ambient plus Highway 6 (New)) to within 5 dBA of the ambient noise levels and for a barrier attenuation of 5 dBA.

2.3 HIGHWAY 6 (NEW) NOISE LEVELS

1. The 1996 noise levels for Highway 6 (New) are calculated on the basis of two road segments (each 3 x lanes, with a width of 11.0 m). The road dimensions used are set out on Figure 1. The road dimensions used for the bridge (overpass) at Highway 53 are set out on Figure 2.

2.0 NOISE LEVEL DATA (Cont'd)

2. Noise levels are calculated using the MTC Model:

$$Leq = 42.3 + 10.2 \log (Vc + 6Vt) + 0.13S - 13.9D$$

where Vc = number of cars per hour
Vt = number of trucks per hour
S = speed in km/hr.
D = distance from edge of pavement to receiver

3. Future (1996) data for Highway 6 (New) are used as follows:

| | North of Airport Road | South of Airport Road | Link Road |
|--------------|--------------------------|--------------------------|-----------|
| AADT | 9000 | 13,900 | 7000 |
| % Trucks | 24 | 13 | 10 |
| Speed | 100 | 100 | 80 |
| No. of Lanes | 6 | 6 | 4 |

2.4 NOISE IMPACT (All noise level data = Leq 24 dBA)

1. The noise impact is analysed on the basis predicted future ambient noise conditions versus predicted traffic noise generated by Highway 6 (New). The impact is examined at potentially sensitive locations along the recommended alignment.
2. Table 1 (3 x pages) sets out the following data for potentially sensitive locations along the recommended alignment.
 - location and site number
 - distance for southbound and northbound lanes
 - Leq 24 for southbound and northbound lanes
 - total Leq 24 from Highway 6 (New)
 - ambient (1996) at the site
 - total of ambient plus Highway 6 (New)
 - increase of ambient

In all cases the site is taken as a point behind the residence, school or church.

3. Site numbers used in this Report are taken from the MTC Report "Route Planning Noise Evaluation" 1986 (A. Jay Muttall, Environmental Planner).

3.0 MITIGATION MEASURES

1. Data used for calculation of noise barrier requirements at potentially sensitive locations are set out on Table 2 (4 x Pages).
2. The computer readouts for noise barrier calculations for each site are included in Appendix 2 for reference purposes.
3. The data and barrier requirements for sites where noise from Highway 6 (New) will increase the ambient by more than 5 dBA are set out on Table 3 (2 x pages). All barrier heights noted are height above the road pavement elevation. Minimum barrier heights used are for "line of sight conditions" (i.e. the condition where noise source, top of barrier and receiver are on a straight line basis).
4. Effective noise source height for Highway 5 (New) is taken at 2.25 m above pavement elevation as per data from MTC at the meeting on March 27, 1986. (This noise source height is considered to be applicable for this noise analysis.)
5. Barrier attenuation calculations are for "infinite length" barriers. The finite barrier length requirements in Table 3 are assessed on the basis of maximum reduction in barrier effectiveness of 2.0 dBA using the following calculation. (Reference National Research Council, Division of Building Research, June 1980 and Table 3.7, CMHC Bulletin NHA 5156 81/10, "Road and Rail Noise - Effects on Housing").

"Barrier length each side of the receiving point is equal to the right angle distance from the receiver to the noise source times a multiplier."

The multipliers are as follows:

| 2 1 | For Barrier Attenuation (dBA) | Multipliers | | |
|-----|-------------------------------------|--|---------|---------------|
| | | For Minimum Reduction in Effectiveness | | |
| | | 2.0 dBA | 1.0 dBA | No. Reduction |
| | 6 | 1.0 | 1.5 | 2.0 |
| | 7 | 1.5 | 2.0 | 4.0 |
| | 8 | 1.5 | 2.0 | 4.0 |
| | 9 | 2.0 | 3.0 | 4.0 |
| | 10 | 2.5 | 3.0 | 5.0 |
| | 11 | 3.0 | 4.0 | 6.0 |
| | 12 | 3.0 | 4.0 | 6.0 |
| | 13 | 4.0 | 6.0 | 10+ |

3.0 MITIGATION MEASURES

- 3.1 Relative elevation data for Unity Road are set out on Figures 3, 4 and 5 and for Highway 53 are set out on Figures 6 and 7.

LO 24 NOISE LEVELS

SD = SOUTH-BOUND
NB = NORTH-BOUND

| AREA | SITE | DISTANCE FROM EOP/SD EOP/NB | LO 24 - HWY 6 (N) | | | LO 24 | | |
|---|------|--------------------------------|-------------------|----|-------|-------|---------------|-----------------------------|
| | | | SB | NB | TOTAL | AMB | AMB + 6(N) | INCREASE OVER AMBIENT |
| GREENS RD. - BOWHIGHT | 1 | 310 | 48 | 47 | 51 | 45 | 52 | 7 |
| UNITY RD | 16 | 229 | 39 | 38 | 42 | 49 | 50 | 1 |
| - TONG | 17 | 199 | 40 | 34 | 43 | 48 | 49 | 1 |
| - MILLER | 18 | 147 | 42 | 41 | 45 | 49 | 50 | 1 |
| - UNITED CH. | 19 | 79 | 50 | 50 | 54 | 50 | 55 | 5 |
| - CUTTS | 21 | 178 | 207 | 41 | 42 | 48 | 50 | 2 |
| - LAMBERT | 22 | 228 | 257 | 40 | 41 | 48 | 49 | 1 |
| - RODGERS | 23 | 240 | 289 | 40 | 41 | 47 | 49 | 2 |
| - SWCLAIR | 24 | 240 | 314 | 39 | 40 | 47 | 48 | 1 |
| - PERDER | 25 | 326 | 344 | 38 | 40 | 47 | 48 | 1 |
| - SCHOOL | 50 | 116 | 145 | 47 | 47 | 45 | 51 | 6 |
| - SLIGH | 51 | 190 | 219 | 44 | 44 | 46 | 50 | 4 |
| - WALKINSHAW | 52 | 222 | 251 | 43 | 46 | 47 | 50 | 3 |
| - SWING | 54 | 280 | 309 | 41 | 42 | 47 | 49 | 2 |
| - BATES | 57 | 368 | 347 | 39 | 40 | 45 | 47 | 2 |
| NOTE: THE NOISE LEVELS FOR LOCATIONS 16 TO 57 | | | | | | | | |
| TAKE INTO ACCOUNT ATTENUATION PROVIDED BY THE CUT | | | | | | | | |

TABLE 1 (CONT'D)

LO 24 NOISE LEVELS

SB = SOUTH-BOUND
NB = NORTH-BOUND

| AREA | SITE | DISTANCE FROM EOP/SD EOP/NB | LO 24 - HWY 6 (N) | | | LO 24 | | |
|------------------------|------|--------------------------------|-------------------|----|-------|-------|---------------|-----------------------------|
| | | | SB | NB | TOTAL | AMB | AMB + 6(N) | INCREASE OVER AMBIENT |
| TOWNLINE RD - DIXON | RAO | 260 | 49 | 48 | 52 | 47 | 53 | 6 |
| LEEMING RD | 96 | 175 | 51 | 50 | 54 | 45 | 55 | 10 |
| - ZOLATSKIA | 97 | 195 | 50 | 50 | 53 | 45 | 54 | 9 |
| - BUTINOFFER | 98 | 245 | 46 | 45 | 49 | 45 | 50 | 5 |
| - BUTINOFFER | 99 | 245 | 45 | 44 | 48 | 45 | 50 | 5 |
| - CEGARR | 100 | 410 | 43 | 43 | 46 | 45 | 49 | 4 |
| - BARTON | 101 | 435 | 43 | 42 | 46 | 45 | 49 | 4 |
| CHIPPENWA RD | 107A | 329 | 47 | 48 | 51 | 46 | 52 | 6 |
| - HOSTEIN | 108 | 304 | 48 | 48 | 51 | 45 | 52 | 7 |
| - QUINN | 119 | 191 | 51 | 52 | 55 | 45 | 55 | 10 |
| - ERNST | 109 | 290 | 48 | 47 | 51 | 45 | 52 | 7 |
| - PALERAD | 120 | 202 | 50 | 49 | 53 | 45 | 54 | 9 |
| - FARNHGH | 121 | 417 | 46 | 46 | 49 | 45 | 50 | 5 |
| WHITECHURCH RD - OKIMI | 133 | 6N/269 6N/269 | 49 | 49 | 52 | 47 | 56 | 9 |
| - OKIMI | 134 | 6N/269 6N/269 | 45 | 46 | 49 | 53 | 56 | 3 |
| - BEDEDICT | 144 | 85 | 55 | 54 | 58 | 53 | 59 | 6 |
| ALBANY RD - JERONG | 158 | 6N/559 6N/530 | 44 | 44 | 47 | 52 | 54 | 2 |

TABLE 1 (CONT'D)

LOG 24 NOISE LEVELSSB = SOUTHBOUND
NB = NORTHBOUND

| AREA | SITE | DISTANCE FROM | | LOG 24 - HWY 6 (N) | | | LOG 24 | | INCREASE OVER AMBIENT |
|------------------------|---|---------------|--------|--------------------|----|-------|--------|----------------|-----------------------------|
| | | EXP/DB | EXP/ND | SB | NB | TOTAL | AMB | AMB. + L(N) | |
| GLAUCASTER RD - GIBSON | 160 | 454 | 425 | 45 | 45 | 48 | 45 | 50 | 5 |
| | - GIBSON | 161 | 249 | 49 | 49 | 52 | 51 | 55 | 4 |
| BUTTER ROAD | - MORRIS | 208 | 294 | 48 | 48 | 51 | 45 | 52 | 7 |
| | - WHITEHEAD | 209 | 124 | 53 | 55 | 54 | 45 | 57 | 12 |
| | - NICOLAN | 210 | 115 | 53 | 52 | 56 | 45 | 56 | 11 |
| | - DODDVAN | 211 | 75 | 56 | 54 | 58 | 45 | 58 | 13 |
| | - SMITH | 212 | 290 | 48 | 47 | 51 | 47 | 52 | 5 |
| BOOK ROAD | - PARKIN | 231 | 314 | 47 | 48 | 51 | 46 | 52 | 6 |
| | - TETRAIE | 232 | 114 | 53 | 55 | 54 | 45 | 57 | 12 |
| | - BOOK | 233 | 175 | 51 | 50 | 54 | 45 | 55 | 10 |
| | - R.C. PROCESE | 234 | 350 | 47 | 44 | 50 | 45 | 51 | 6 |
| | NOTE: SITE 233 WILL BE WITHIN THE INTERCHANGE | | | | | | | | |
| HIGHWAY 53 | - REED | 257 | 60 | 57 | 55 | 59 | 54 | 60 | 6 |
| | - ROBERTS | 258 | 94 | 55 | 54 | 59 | 53 | 60 | 7 |

TABLE 2
NOISE BARRIER CALCULATION DATA

SOURCE HEIGHT = 2.25 M - AS PER MTC.

RECEIVER HEIGHT = 1.5 M

NOISE FREQUENCY = 500 HZ.

| AREA & SITE NO. | L _{eq} A _{ES} | L _{eq} BARRIER (M) | SOURCE ELEV | RCVR ELEV | DSB | DBR |
|-----------------|------------------------------------|-----------------------------------|----------------|--------------|------|-----|
| | | | | | | |
| GREENS RD - 1 | SB 48 | 209.9 | 209.9 | 210.2 | 25.5 | 290 |
| | NB 47 | 209.9 | 209.9 | 210.2 | 54.5 | 290 |
| UNITY RD 16 | SB 39 | 217.3 | 209.2 | 212 | 54.5 | 180 |
| | NB 38 | 217.3 | 209.2 | 212 | 25.5 | 180 |
| 17 | SB 40 | 217.3 | 209.2 | 213 | 54.5 | 150 |
| | NB 39 | 217.3 | 209.2 | 213 | 25.5 | 150 |
| 18 | SB 42 | 217.3 | 209.2 | 214 | 54.5 | 98 |
| | NB 41 | 217.3 | 209.2 | 214 | 25.5 | 98 |
| 19 | SB 51 | 217.3 | 209.2 | 218 | 54.5 | 30 |
| | NB 50 | 217.3 | 209.2 | 218 | 25.5 | 30 |
| 21 | SB 41 | 214.9 | 209.2 | 210.5 | 25.5 | 158 |
| | NB 42 | 214.9 | 209.2 | 210.5 | 54.5 | 158 |
| 22 | SB 40 | 214.9 | 209.2 | 211.5 | 25.5 | 198 |
| | NB 41 | 214.9 | 209.2 | 211.5 | 54.5 | 198 |
| 23 | SB 40 | 214.9 | 209.2 | 211.5 | 25.5 | 240 |
| | NB 41 | 214.9 | 209.2 | 211.5 | 54.5 | 240 |
| 24 | SB 39 | 214.9 | 209.2 | 212.5 | 25.5 | 270 |
| | NB 40 | 214.9 | 209.2 | 212.5 | 54.5 | 270 |
| 25 | SB 38 | 214.9 | 209.2 | 212.5 | 25.5 | 300 |
| | NB 40 | 214.9 | 209.2 | 212.5 | 54.5 | 300 |

TABLE 2 (CONT'D)
NOISE BARRIER CALCULATION DATA

| SOURCE HEIGHT = 2.25 M - AS PER MTL | | | | | | | | | |
|-------------------------------------|----------------------------------|-------|----------------------------|-------|------|-----|--|--|--|
| RECEIVER HEIGHT = 1.5 M | | | | | | | | | |
| NOISE FREQUENCY = 500 HZ | | | | | | | | | |
| AREA & SITE NO. | L _A N _E | Log | BARRIER SOURCE | RCVR | DSB | DBR | | | |
| | | | GND ELEV GND ELEV GND ELEV | | | | | | |
| UNITY RD -50 | SB 47 | 214.0 | 209.5 | 214 | 25.5 | 96 | | | |
| | NB 47 | 214.0 | 209.5 | 214 | 54.5 | 96 | | | |
| | -51 SB 44 | 214.0 | 209.5 | 213 | 25.5 | 170 | | | |
| | NB 44 | 214.0 | 209.5 | 213 | 54.5 | 170 | | | |
| | -52 SB 43 | 214.0 | 209.5 | 213 | 25.5 | 202 | | | |
| | NB 43 | 214.0 | 209.5 | 213 | 54.5 | 202 | | | |
| | -54 SB 41 | 214.0 | 209.5 | 212.5 | 25.5 | 260 | | | |
| | NB 42 | 214.0 | 209.5 | 212.5 | 54.5 | 260 | | | |
| | -57 SB 39 | 214.0 | 209.5 | 211.5 | 25.5 | 348 | | | |
| | NB 40 | 214.0 | 209.5 | 211.5 | 54.5 | 348 | | | |
| | | | | | | | | | |
| TOWNLINE RD -80A | SB 49 | 216.1 | 216.1 | 213 | 25.5 | 240 | | | |
| | NB 48 | 216.1 | 216.1 | 213 | 54.5 | 240 | | | |
| | | | | | | | | | |
| LEEHLING RD -96 | SB 51 | 219.0 | 219.0 | 219.2 | 25.5 | 145 | | | |
| | NB 50 | 219.0 | 219.0 | 219.2 | 54.5 | 145 | | | |
| | 97 SB 50 | 219.8 | 219.8 | 220 | 25.5 | 175 | | | |
| | NB 50 | 219.8 | 219.8 | 220 | 54.5 | 175 | | | |
| | 98 SB 46 | 219.8 | 219.8 | 220 | 25.5 | 225 | | | |
| | NB 45 | 219.8 | 219.8 | 220 | 54.5 | 225 | | | |
| | 99 SB 45 | 219.8 | 219.8 | 219.5 | 25.5 | 275 | | | |
| | NB 44 | 219.8 | 219.8 | 219.5 | 54.5 | 275 | | | |
| | | | | | | | | | |
| | | | | | | | | | |

TABLE 2 (CONT'D)
NOISE BARRIER CALCULATION DATA

| SOURCE HEIGHT = 2.25 M - AS PER MTL | | | | | | | | | |
|-------------------------------------|----------------------------------|-------|----------------------------|-------|------|-----|--|--|--|
| RECEIVER HEIGHT = 1.5 M | | | | | | | | | |
| NOISE FREQUENCY = 500 HZ | | | | | | | | | |
| AREA & SITE NO. | L _A N _E | Log | BARRIER SOURCE | RCVR | DSB | DBR | | | |
| | | | GND ELEV GND ELEV GND ELEV | | | | | | |
| CHIPPEWARD -107B | SB 47 | 215 | 215 | 211.5 | 54.5 | 280 | | | |
| | NB 48 | 215 | 215 | 211.5 | 25.5 | 280 | | | |
| | -108 SB 48 | 215 | 215 | 212.6 | 54.5 | 255 | | | |
| | NB 48 | 215 | 215 | 212.6 | 25.5 | 255 | | | |
| | -119 SB 51 | 214.3 | 214.3 | 210.0 | 54.5 | 142 | | | |
| | NB 52 | 214.3 | 214.3 | 210.0 | 25.5 | 142 | | | |
| | | | | | | | | | |
| | -109 SB 48 | 215 | 215 | 216.5 | 25.5 | 270 | | | |
| | NB 47 | 215 | 215 | 216.5 | 54.5 | 270 | | | |
| | 120 SB 50 | 214.3 | 214.3 | 214.3 | 25.5 | 182 | | | |
| | NB 49 | 214.3 | 214.3 | 214.3 | 54.5 | 182 | | | |
| | 121 SB 46 | 214.3 | 214.3 | 216.0 | 25.5 | 387 | | | |
| | NB 46 | 214.3 | 214.3 | 216.0 | 54.5 | 387 | | | |
| | | | | | | | | | |
| WHITECHURCH RD -135 | SB 49 | 212.8 | 212.8 | 216.5 | 54.5 | 220 | | | |
| | NB 49 | 212.8 | 212.8 | 216.5 | 25.5 | 220 | | | |
| | 6L 54 | 214.7 | 214.7 | 216.5 | 12 | 68 | | | |
| | -149 SB 55 | 214.2 | 214.2 | 218 | 25.5 | 65 | | | |
| | NB 54 | 214.2 | 214.2 | 218 | 54.5 | 65 | | | |
| | | | | | | | | | |
| HIGHWAY 53 -257 | SB 55 | 249.6 | 249.6 | 241 | 10.5 | 55 | | | |
| | NB 57 | 249.6 | 249.6 | 241 | 39.5 | 55 | | | |
| | 258 SB 55 | 249.4 | 249.4 | 246 | 39.5 | 60 | | | |
| | NB 57 | 249.4 | 249.4 | 246 | 10.5 | 60 | | | |
| | | | | | | | | | |

TABLE 2 (CONT'D)

NOISE BARRIER CALCULATION DATA.

SOURCE HEIGHT = 2.25 M - AS PER MTC.

RECEIVER HEIGHT = 1.5 M

NOISE FREQUENCY = 500 HZ

| AREA & SITE NO. | LA dB | Lq | BARR. GND. EL. | SOURCE GND. EL. | RCVR GND. EL. | DSB | DBR | |
|-----------------|----------|-------|-------------------|--------------------|------------------|-----|-----|--|
| BUTTER RD - 208 | SB 48 | 226.6 | 226.6 | 226 | 53 | 244 | | |
| | NB 48 | 226.6 | 226.6 | 226 | 27 | 244 | | |
| - 209 | SB 53 | 225.2 | 225.2 | 225 | 53 | 75 | | |
| | NB 55 | 225.2 | 225.2 | 225 | 27 | 75 | | |
| - 210 | SB 53 | 225.6 | 225.6 | 224.1 | 27 | 96 | | |
| | NB 52 | 225.6 | 225.6 | 224.1 | 53 | 96 | | |
| - 211 | SB 56 | 226.6 | 226.6 | 222.1 | 27 | 55 | | |
| | NB 54 | 226.6 | 226.6 | 222.1 | 53 | 55 | | |
| BOOK RD - 231 | SB 47 | 233 | 233 | 237 | 53 | 270 | | |
| | NB 48 | 233 | 233 | 237 | 27 | 270 | | |
| - 232 | SB 53 | 231.5 | 231.5 | 234 | 53 | 60 | | |
| | NB 55 | 231.5 | 231.5 | 234 | 27 | 60 | | |
| - 233 | SB 51 | 235.2 | 235.2 | 245 | 27 | 150 | | |
| | NB 50 | 235.2 | 235.2 | 245 | 53 | 150 | | |
| - 234 | SB 47 | 235.2 | 235.2 | 246.2 | 27 | 330 | | |
| | NB 46 | 235.2 | 235.2 | 246.2 | 53 | 330 | | |

TABLE 3

| LOCATION | SITE NO. | INCREASE IN LEVEL DUE TO HWY 6(N) | BARRIER HEIGHT ABOVE PAVEMENT ELEV | | | BARRIER LENGTH | |
|---|-------------|--|---------------------------------------|---------------------------------------|-----------------------------|----------------|--------|
| | | | FOR ATT TO AMB | FOR ATT WITHIN 5' HSA OF AMB | FOR MIN ATT OF 5' HSA | FROM | TO |
| GREENS ROAD | | | | | | | |
| - BOTHWRIGHT | 1 | 7 | 3.0 | 2.5 | 2.5 | 10+000 | 10+515 |
| UNITY ROAD | | | | | | | |
| - SCHOOL | 50 | 6 | 3.6 | 1.2 | 0.0 | 12+150 | 12+400 |
| TOWNLINE ROAD | | | | | | | |
| - DIXON | 80A | 6 | 1.9 | 1.9 | 1.9 | 13+040 | 13+340 |
| LEEMING ROAD | | | | | | | |
| - LEEMING | 96 | 10 | 5.2 | 2.2 | 2.2 | 13+460 | 13+900 |
| - ZOLATURK | 97 | 9 | 5.2 | 2.2 | 2.2 | 13+920 | 14+350 |
| CHIPPEWA ROAD | | | | | | | |
| - | 101B | 6 | 3.1 | 2.2 | 2.2 | 14+815 | 15+230 |
| - HOSTEIN | 108 | 7 | | | | | |
| - ERNST | 109 | 7 | 3.2 | 2.6 | 2.6 | 14+800 | 15+230 |
| - QUINN | 119 | 10 | 4.9 | 2.0 | 1.6 | 15+255 | 15+610 |
| - PALERMO | 120 | 9 | 4.4 | 2.3 | 2.3 | 15+255 | 15+660 |
| WHITECHURCH RD | | | | | | | |
| - OKIMI | 133 | 9 | 6(N) 5.9 | 2.9 | 2.9 | 15+560 | 16+050 |
| | | | 6(L) 4.1 | 2.0 | 2.0 | - 140 | + 140 |
| NOTE: SITE 133 IS IMPACTED BY NOISE FROM HWY 6 (NEW) AND HWY 6 (LINK RD) - SHOWN ABOVE AS 6(N) AND 6(L). REFERENCE 6(L) - BARRIER LENGTH IS EACH SIDE OF SITE 133. | | | | | | | |

TABLE 3 (CONT'D)

| LOCATION | SITE NO. | INCREASE IN LEVEL DUE TO HWY 6(N) | BARRIER HEIGHT ABOVE PAVEMENT ELEV | | | BARRIER LENGTH | |
|----------------|----------|-----------------------------------|------------------------------------|------------------------------|-----------------------|----------------|--------|
| | | | FOR ATT TO AMB | FOR ATT WITHIN 5' ABA OF AMB | FOR MIN ATT OF 5' ABA | FROM | TO |
| WHITECHURCH RD | | | | | | | |
| - BENEDICT | 149 | 6 | 3.8 | 3.8 | 3.8 | 15+470 | 15+580 |
| BUTTER ROAD | | | | | | | |
| - MORRIS | 208 | 7 | 3.4 | 2.2 | 2.2 | 20+550 | 20+975 |
| - WHITEHEAD | 209 | 12 | 7.3 | 4.0 | 2.2 | 19+950 | 20+490 |
| - NILOLAN | 210 | 11 | 5.8 | 2.8 | 1.9 | 19+980 | 20+500 |
| - DONOVAN | 211 | 13 | 6.4 | 2.8 | 1.3 | 20+550 | 20+960 |
| BOOK ROAD | | | | | | | |
| - PARKIN | 231 | 6 | 2.8 | 2.8 | 2.8 | 22+605 | 23+040 |
| - PETRIE | 232 | 12 | 7.9 | 4.9 | 3.1 | 22+250 | 22+575 |
| - BOOK | 233 | 10 | 7.6 | 4.6 | 4.6 | 22+595 | 23+105 |
| - R.C. DIOCESE | 234 | 6 | 3.7 | 3.7 | 3.7 | 22+595 | 23+100 |
| HIGHWAY 53 | | | | | | | |
| - REED | 257 | 6 | 1.0 | 1.0 | 0.9 | 24+420 | 24+580 |
| - ROBERTS | 258 | 7 | 2.4 | 1.8 | 1.8 | 24+370 | 24+630 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

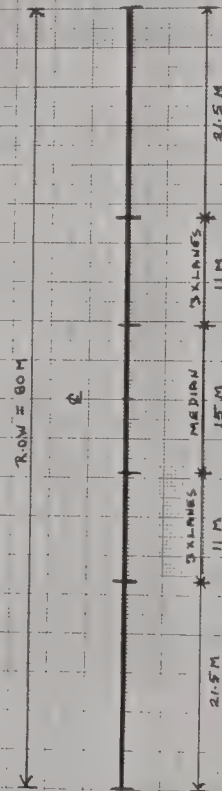
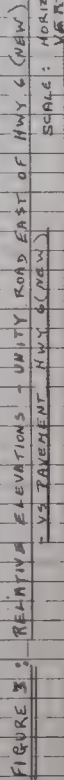
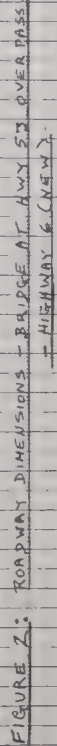
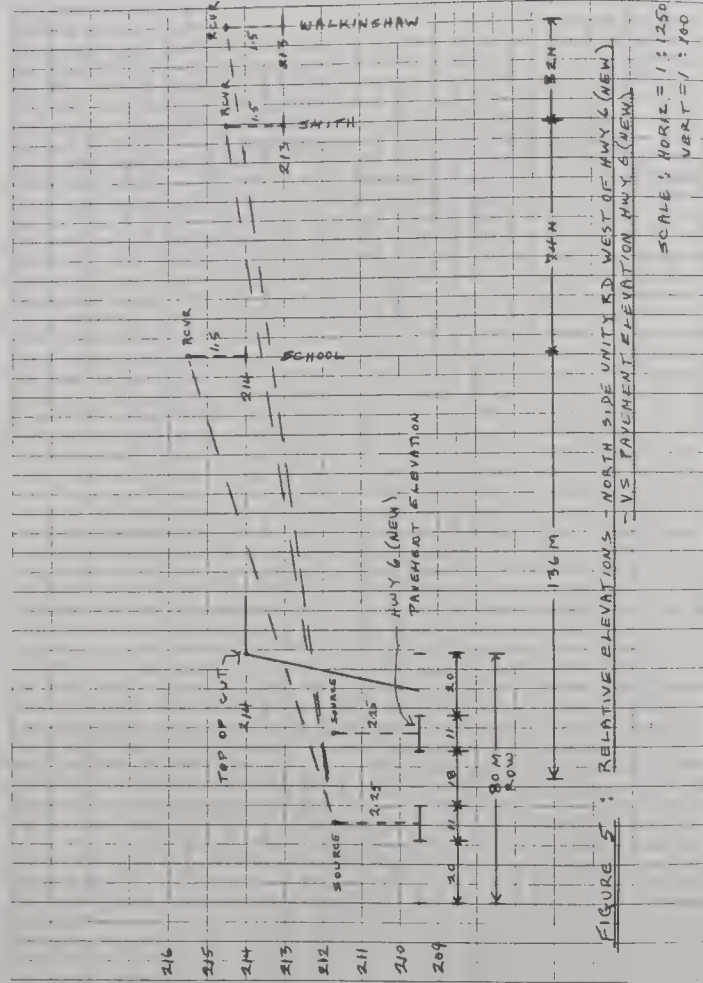
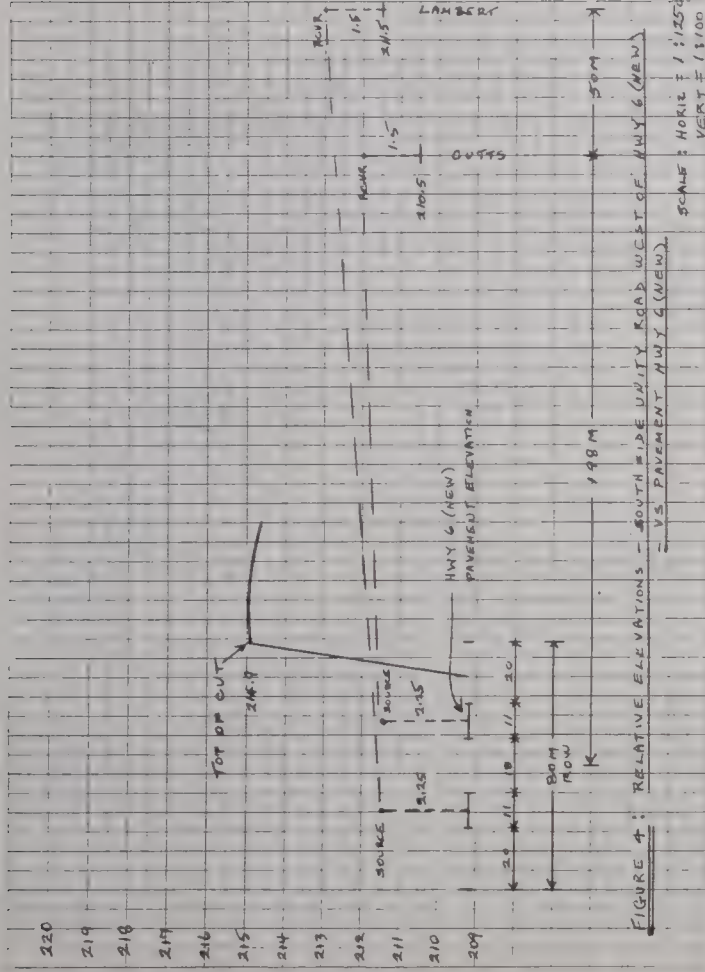


FIGURE 1: ROADWAY DIMENSIONS - HIGHWAY 6 (NEW)





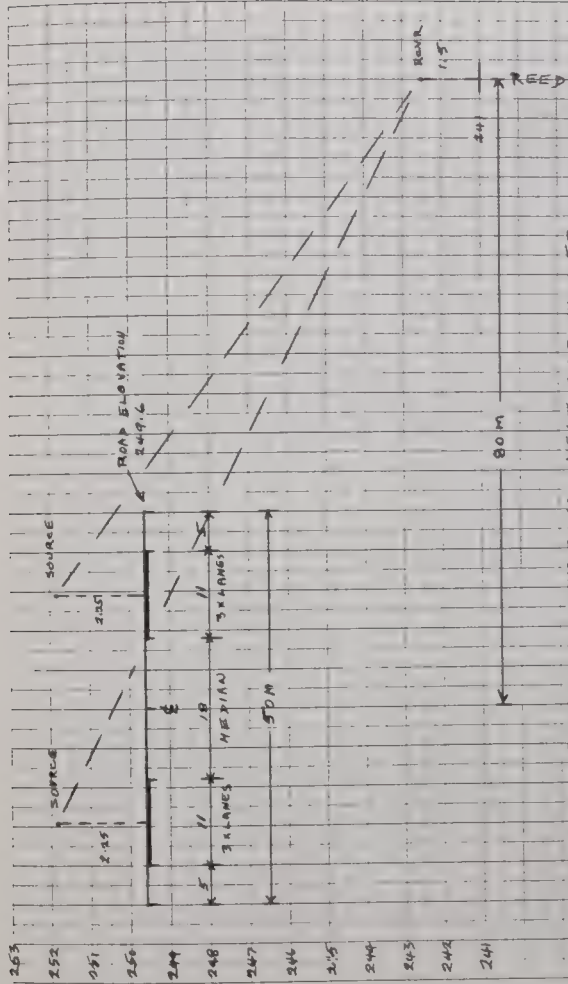


FIGURE 6: RELATIVE ELEVATIONS - WEST SIDE HWY 53
SOUTH OF HWY 6 (NEW) - REED RESIDENCE

SCALE: HORIZ = 1" = 500
VERT = 1" = 100

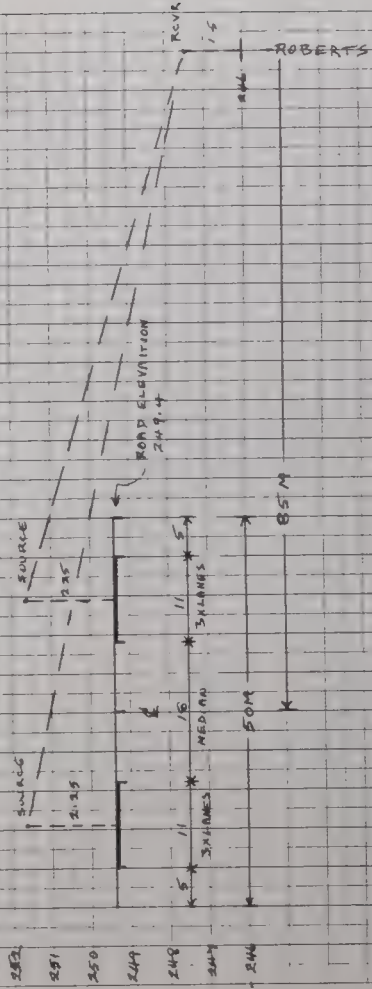


FIGURE 7: RELATIVE ELEVATIONS - EAST SIDE HWY 53
SOUTH OF HWY 6 (NEW) - ROBERTS RESIDENCE

S. S. WILSON AND ASSOCIATES

Leq Readings in dBA - at 15 m from edge of pavement

APPENDIX 1

(REVISION 1, Report W86-204, No.2)

ON SITE NOISE LEVEL MEASUREMENTS

A. GENERAL

- Measurements were made during the period from April 30 to May 16, 1985 as weather conditions permitted.
- 24-hour measurements were made at 5 x locations.
 - Book Road - between Glancaster Road and Fiddler's Green Road
 - Whitechurch Road West - at approximately 1 km west of Highway 6
 - Carluk Road - east of Fiddler's Green Road
 - Townline Road - near Glancaster Road
 - Townline Road - at approximately 1 km west of Highway 6.
- Short-term measurements were made at 3 x locations.
 - Highway 53 - near Fiddler's Green Road ✓
 - Fiddler's Green Road - near Butter Road ✓
 - Mines Road - near Unity Road. ✓
- All measurements are set out on the tables in this Appendix.

B. METHODOLOGY

- On site measurements were made using a General Radio 1945-9700 Community Noise Analyzer.
- The microphone was set at 15 m from the edge of pavement at approximately 1.5 m above the pavement elevation.

| TIME | Whitechurch near Hwy. 6 | Carluk near Fiddler's Green | Townline near Hwy. 6 | Townline near Glancaster |
|---------------|----------------------------|--------------------------------|-------------------------|-----------------------------|
| 07:00 - 08:00 | 57 | 58 | 56 | 53 |
| 08:00 - 09:00 | 62 | 60 | 58 | 55 |
| 09:00 - 10:00 | 60 | 60 | 56 | 51 |
| 10:00 - 11:00 | 55 | 57 | 54 | 48 |
| 11:00 - 12:00 | 57 | 55 | 52 | 49 |
| 12:00 - 13:00 | 56 | 55 | 54 | 52 |
| 13:00 - 14:00 | 54 | 53 | 54 | 51 |
| 14:00 - 15:00 | 55 | 56 | 53 | 49 |
| 15:00 - 16:00 | 57 | 56 | 52 | 49 |
| 16:00 - 17:00 | 63 | 59 | 54 | 54 |
| 17:00 - 18:00 | 63 | 62 | 57 | 53 |
| 18:00 - 19:00 | 59 | 60 | 54 | 55 |
| 19:00 - 20:00 | 59 | 57 | 54 | 53 |
| 20:00 - 21:00 | 58 | 56 | 52 | 51 |
| 21:00 - 22:00 | 55 | 54 | 50 | 49 |
| 22:00 - 23:00 | 54 | 51 | 50 | 46 |
| 23:00 - 24:00 | 52 | 50 | 49 | 47 |
| 00:00 - 01:00 | 52 | 48 | 45 | 43 |
| 01:00 - 02:00 | 45 | 47 | 42 | 44 |
| 02:00 - 03:00 | 43 | 42 | 40 | 41 |
| 03:00 - 04:00 | 42 | 43 | 41 | 41 |
| 04:00 - 05:00 | 47 | 48 | 41 | 43 |
| 05:00 - 06:00 | 53 | 48 | 50 | 48 |
| 06:00 - 07:00 | 55 | 54 | 52 | 50 |
| DAY/NIGHT | 59/51 | 58/49 | 54/47 | 52/45 |

S. S. WILSON AND ASSOCIATES

Leq Readings in dBA - at 15 m from edge of pavement

| TIME | Book Road | Hwy. 53 near Fiddler's Green | Fiddler's Green near Butter | Mines Road near Unity |
|---------------|-----------|---------------------------------|--------------------------------|--------------------------|
| 07:00 - 08:00 | 54 | | | |
| 08:00 - 09:00 | 55 | | | |
| 09:00 - 10:00 | 52 | | | |
| 10:00 - 11:00 | 50 | | 55 | |
| 11:00 - 12:00 | 50 | | | |
| 12:00 - 13:00 | 51 | | | |
| 13:00 - 14:00 | 50 | 70 | | |
| 14:00 - 15:00 | 52 | | | |
| 15:00 - 16:00 | 52 | | | 52 |
| 16:00 - 17:00 | 53 | | | |
| 17:00 - 18:00 | 55 | 71 | (truck traffic) 75 | 53 |
| 18:00 - 19:00 | 53 | | | |
| 19:00 - 20:00 | 55 | | | |
| 20:00 - 21:00 | 51 | | | |
| 21:00 - 22:00 | 53 | | | |
| 22:00 - 23:00 | 48 | | | |
| 23:00 - 24:00 | 45 | | | |
| 00:00 - 01:00 | 41 | | | |
| 01:00 - 02:00 | 43 | | | |
| 02:00 - 03:00 | 42 | | | |
| 03:00 - 04:00 | 37 | | | |
| 04:00 - 05:00 | 41 | | | |
| 05:00 - 06:00 | 45 | | | |
| 06:00 - 07:00 | 51 | | | |
| DAY/NIGHT | 53/45 | | | |

APPENDIX 2

(Revision 2, Report W86-204, No. 2)

A. GENERAL

- Barrier attenuation is calculated using a computer programmed for optical diffraction theory.
- Attenuation for road traffic noise is calculated for 500 Hz (wavelength 0.69 m) with reference to the curve for a long incoherent noise source.
- Receiver height is taken at 1.5 m above the ground level at the receiving point.
- Effective noise source height for Highway 6 (New) is taken at 2.25 m (as per MTC data given at the meeting of March 27, 1986).
- Distances and elevations are taken from drawings (referenced in Section 1.0).

- B. Barrier attenuation data for Highway 6 (New) at potentially sensitive locations are set out on the following computer readouts.

The data for Unity Road takes into account the fact that Highway 6 (New) is in "cut" at this location. The 0.0 data (in the first line of the tables) represents attenuation due to the cut.

NOISE BARRIER ATTENUATION ALTERNATIVES

GREENS ROAD

LOCATION: Lot 1/5B - BOTHWRIGHT.

Starting Barrier Height above Ground = 1 M.
Ground Elevation at Base of Noise Barrier = 209.9 M.
Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
Ground Elevation at Source = 209.9 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 210.2 M.
Horizontal Distance from Noise Source to Barrier = 25.5 M.
Horizontal Distance from Barrier to Receiver = 290 M.
Frequency of the Noise = 500 Hz

| DN ABOVE P.L. | NB | A | B | C | PLD | ATT. | ZONE | LEG | |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----|----|
| | | | | | | | | NB | WB |
| 1.00 | 210.90 | 25.53 | 290.00 | 315.50 | 0.031 | 3.6 | Bright | 48 | 44 |
| 1.30 | 211.20 | 25.52 | 290.00 | 315.50 | 0.018 | 4.2 | Bright | 48 | 44 |
| 1.60 | 211.50 | 25.51 | 290.00 | 315.50 | 0.008 | 4.7 | Bright | 48 | 43 |
| 1.90 | 211.80 | 25.50 | 290.00 | 315.50 | 0.002 | 4.9 | Bright | 48 | 43 |
| 2.20 | 212.10 | 25.50 | 290.00 | 315.50 | 0.000 | 5.0 | Bright | 48 | 43 |
| 2.50 | 212.40 | 25.50 | 290.00 | 315.50 | 0.002 | 5.0 | Shadow | 48 | 43 |
| 2.80 | 212.70 | 25.51 | 290.00 | 315.50 | 0.007 | 5.2 | Shadow | 48 | 43 |
| 3.10 | 213.00 | 25.51 | 290.00 | 315.50 | 0.017 | 5.5 | Shadow | 48 | 42 |
| 3.40 | 213.30 | 25.53 | 290.00 | 315.50 | 0.030 | 5.9 | Shadow | 48 | 42 |
| 3.70 | 213.60 | 25.54 | 290.01 | 315.50 | 0.047 | 6.3 | Shadow | 48 | 42 |

Barrier Calculations based on MRC/CMC model.

NS = 212.15 (ELEVATION AT NOISE SOURCE)
NR = 211.7 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD4 INM1.
BSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
BBR = 290 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEG NB = LEG (DBA) AT RECEIVER NO BARRIER.
LEG WB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 1/5B - GREENS RD - BOTHWRIGHT

Starting Barrier Height above Ground = 1 M.
Ground Elevation at Base of Noise Barrier = 209.9 M.
Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
Ground Elevation at Source = 209.9 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 210.2 M.
Horizontal Distance from Noise Source to Barrier = 54.5 M.
Horizontal Distance from Barrier to Receiver = 290 M.
Frequency of the Noise = 500 Hz

| DN ABOVE P.L. | NB | A | B | C | PLD | ATT. | ZONE | LEG | |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----|----|
| | | | | | | | | NB | WB |
| 1.00 | 210.90 | 54.51 | 290.00 | 344.50 | 0.015 | 4.4 | Bright | 47 | 43 |
| 1.30 | 211.20 | 54.51 | 290.00 | 344.50 | 0.008 | 4.6 | Bright | 47 | 42 |
| 1.60 | 211.50 | 54.50 | 290.00 | 344.50 | 0.004 | 4.8 | Bright | 47 | 42 |
| 1.90 | 211.80 | 54.50 | 290.00 | 344.50 | 0.001 | 4.9 | Bright | 47 | 42 |
| 2.20 | 212.10 | 54.50 | 290.00 | 344.50 | 0.000 | 5.0 | Shadow | 47 | 42 |
| 2.50 | 212.40 | 54.50 | 290.00 | 344.50 | 0.001 | 5.0 | Shadow | 47 | 42 |
| 2.80 | 212.70 | 54.50 | 290.00 | 344.50 | 0.004 | 5.1 | Shadow | 47 | 42 |
| 3.10 | 213.00 | 54.51 | 290.00 | 344.50 | 0.009 | 5.3 | Shadow | 47 | 42 |

Barrier Calculations based on MRC/CMC model.

NS = 212.15 (ELEVATION AT NOISE SOURCE)
NR = 211.7 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD4 INM1.
BSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
BBR = 290 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEG NB = LEG (DBA) AT RECEIVER NO BARRIER.
LEG WB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 16/50 - LANE

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 217.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 180 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | | | LEG LEG | |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|---------|--|
| ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO | | |
| 0.00 | 217.30 | 54.81 | 180.04 | 234.51 | 0.344 | 10.4 | Shadow | 50 | 39 | | |
| 0.30 | 217.60 | 54.85 | 180.05 | 234.51 | 0.364 | 10.8 | Shadow | 50 | 39 | | |
| 0.60 | 217.90 | 54.88 | 180.05 | 234.51 | 0.425 | 11.1 | Shadow | 50 | 38 | | |
| 0.90 | 218.20 | 54.92 | 180.06 | 234.51 | 0.469 | 11.5 | Shadow | 50 | 38 | | |
| 1.20 | 218.50 | 54.95 | 180.07 | 234.51 | 0.515 | 11.8 | Shadow | 50 | 38 | | |
| 1.50 | 218.80 | 54.99 | 180.08 | 234.51 | 0.562 | 12.1 | Shadow | 50 | 37 | | |
| 1.80 | 219.10 | 55.03 | 180.09 | 234.51 | 0.612 | 12.4 | Shadow | 50 | 37 | | |
| 2.10 | 219.40 | 55.08 | 180.10 | 234.51 | 0.665 | 12.6 | Shadow | 50 | 37 | | |
| 2.40 | 219.70 | 55.12 | 180.11 | 234.51 | 0.719 | 12.9 | Shadow | 50 | 37 | | |
| 2.70 | 220.00 | 55.17 | 180.12 | 234.51 | 0.775 | 13.1 | Shadow | 50 | 36 | | |
| 3.00 | 220.30 | 55.21 | 180.13 | 234.51 | 0.833 | 13.4 | Shadow | 50 | 36 | | |
| 3.30 | 220.60 | 55.26 | 180.14 | 234.51 | 0.894 | 13.6 | Shadow | 50 | 36 | | |
| 3.60 | 220.90 | 55.31 | 180.15 | 234.51 | 0.956 | 13.9 | Shadow | 50 | 36 | | |
| 3.90 | 221.20 | 55.37 | 180.16 | 234.51 | 1.021 | 14.1 | Shadow | 50 | 35 | | |
| 4.20 | 221.50 | 55.42 | 180.18 | 234.51 | 1.088 | 14.3 | Shadow | 50 | 35 | | |
| 4.50 | 221.80 | 55.47 | 180.19 | 234.51 | 1.156 | 14.5 | Shadow | 50 | 35 | | |
| 4.80 | 222.10 | 55.53 | 180.21 | 234.51 | 1.227 | 14.7 | Shadow | 50 | 35 | | |
| 5.10 | 222.40 | 55.59 | 180.22 | 234.51 | 1.300 | 14.9 | Shadow | 50 | 35 | | |

Barrier Calculations based on MRC/CNRC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 213.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDg MMAL.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BBR = 180 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG NO = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG MB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 16/NO - LANE

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 217.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 180 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | | | LEG LEG | |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|---------|--|
| ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO | | |
| 0.00 | 217.30 | 26.16 | 180.04 | 205.51 | 0.692 | 12.8 | Shadow | 50 | 38 | | |
| 0.30 | 217.60 | 26.23 | 180.05 | 205.51 | 0.748 | 13.1 | Shadow | 50 | 37 | | |
| 0.60 | 217.90 | 26.30 | 180.05 | 205.51 | 0.847 | 13.4 | Shadow | 50 | 37 | | |
| 0.90 | 218.20 | 26.38 | 180.06 | 205.51 | 0.929 | 13.8 | Shadow | 50 | 37 | | |
| 1.20 | 218.50 | 26.46 | 180.07 | 205.51 | 1.016 | 14.1 | Shadow | 50 | 36 | | |
| 1.50 | 218.80 | 26.54 | 180.08 | 205.51 | 1.106 | 14.3 | Shadow | 50 | 36 | | |
| 1.80 | 219.10 | 26.62 | 180.09 | 205.51 | 1.200 | 14.6 | Shadow | 50 | 36 | | |
| 2.10 | 219.40 | 26.71 | 180.10 | 205.51 | 1.297 | 14.9 | Shadow | 50 | 35 | | |
| 2.40 | 219.70 | 26.80 | 180.11 | 205.51 | 1.398 | 15.1 | Shadow | 50 | 35 | | |
| 2.70 | 220.00 | 26.90 | 180.12 | 205.51 | 1.502 | 15.4 | Shadow | 50 | 35 | | |
| 3.00 | 220.30 | 26.99 | 180.13 | 205.51 | 1.610 | 15.6 | Shadow | 50 | 35 | | |

Barrier Calculations based on MRC/CNRC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 213.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDg MMAL.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BBR = 180 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG NO = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG MB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 17/50 - TONG

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 217.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 150 M.
 Frequency of the Noise = 500 Hz

| BH | ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO |
|------|------------|-------|--------|--------|-------|------|--------|------|----|----|
| 0.00 | 217.30 | 54.01 | 150.03 | 204.52 | 0.316 | 10.2 | Shadow | | 50 | 40 |
| 0.30 | 217.60 | 54.05 | 150.03 | 204.52 | 0.355 | 10.5 | Shadow | | 50 | 40 |

Barrier Calculations based on MTC/CMC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN M.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 150 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG NO = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG NO = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 17/50 - TONG

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 217.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 150 M.
 Frequency of the Noise = 500 Hz

| BH | ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO |
|------|------------|-------|--------|--------|-------|------|--------|------|----|----|
| 0.00 | 217.30 | 26.16 | 150.03 | 175.53 | 0.662 | 12.6 | Shadow | | 51 | 39 |
| 0.30 | 217.60 | 26.23 | 150.03 | 175.53 | 0.737 | 13.0 | Shadow | | 51 | 38 |
| 0.60 | 217.90 | 26.30 | 150.04 | 175.53 | 0.815 | 13.3 | Shadow | | 51 | 38 |
| 0.90 | 218.20 | 26.38 | 150.05 | 175.53 | 0.897 | 13.6 | Shadow | | 51 | 38 |
| 1.20 | 218.50 | 26.44 | 150.05 | 175.53 | 0.983 | 13.9 | Shadow | | 51 | 37 |
| 1.50 | 218.80 | 26.54 | 150.06 | 175.53 | 1.073 | 14.2 | Shadow | | 51 | 37 |
| 1.80 | 219.10 | 26.62 | 150.07 | 175.53 | 1.167 | 14.5 | Shadow | | 51 | 37 |
| 2.10 | 219.40 | 26.71 | 150.08 | 175.53 | 1.264 | 14.8 | Shadow | | 51 | 37 |
| 2.40 | 219.70 | 26.80 | 150.09 | 175.53 | 1.365 | 15.0 | Shadow | | 51 | 36 |
| 2.70 | 220.00 | 26.90 | 150.10 | 175.53 | 1.470 | 15.3 | Shadow | | 51 | 36 |
| 3.00 | 220.30 | 26.99 | 150.11 | 175.53 | 1.578 | 15.5 | Shadow | | 51 | 36 |
| 3.30 | 220.60 | 27.09 | 150.12 | 175.53 | 1.689 | 15.8 | Shadow | | 51 | 36 |
| 3.60 | 220.90 | 27.19 | 150.14 | 175.53 | 1.805 | 16.0 | Shadow | | 51 | 35 |
| 3.90 | 221.20 | 27.30 | 150.15 | 175.53 | 1.923 | 16.2 | Shadow | | 51 | 35 |
| 4.20 | 221.50 | 27.41 | 150.16 | 175.53 | 2.046 | 16.4 | Shadow | | 51 | 35 |
| 4.50 | 221.80 | 27.52 | 150.18 | 175.53 | 2.171 | 16.6 | Shadow | | 51 | 35 |
| 4.80 | 222.10 | 27.63 | 150.19 | 175.53 | 2.301 | 16.8 | Shadow | | 51 | 35 |

Barrier Calculations based on MTC/CMC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN M.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 150 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG NO = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG NO = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

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LOCATION: Lot 10/5B - MILLER

Starting Barrier Height above Ground = 0 ft.
 Ground Elevation at Base of Noise Barrier = 217.3 ft.
 Effective Noise Source Height above Ground = 2.25 ft. As Per MTC Method
 Ground Elevation at Source = 209.2 ft.
 Effective Noise Receiver Height above ground = 1.5 ft.
 Ground Elevation at base of receiving point = 214 ft.
 Horizontal Distance from Noise Source to Barrier = 54.5 ft.
 Horizontal Distance from Barrier to Receiver = 98 ft.
 Frequency of the Noise = 500 Hz

| BH | | LED LEG | | | | | | | | | |
|-------|--------|---------|-------|--------|-------|------|--------|----|----|--|--|
| ABOVE | MB | A | B | C | PLD | ATT. | ZONE | MB | MB | | |
| P.L. | | | | | | | | | | | |
| 0.00 | 217.30 | 54.81 | 98.02 | 152.55 | 0.276 | 9.7 | Shadow | 52 | 42 | | |
| 0.30 | 217.60 | 54.85 | 98.02 | 152.55 | 0.315 | 10.1 | Shadow | 52 | 42 | | |
| 0.60 | 217.90 | 54.88 | 98.03 | 152.55 | 0.356 | 10.5 | Shadow | 52 | 42 | | |
| 0.90 | 218.20 | 54.92 | 98.04 | 152.55 | 0.400 | 10.9 | Shadow | 52 | 41 | | |
| 1.20 | 218.50 | 54.95 | 98.05 | 152.55 | 0.446 | 11.3 | Shadow | 52 | 41 | | |
| 1.50 | 218.80 | 54.99 | 98.06 | 152.55 | 0.495 | 11.6 | Shadow | 52 | 41 | | |
| 1.80 | 219.10 | 55.03 | 98.07 | 152.55 | 0.547 | 12.0 | Shadow | 52 | 40 | | |
| 2.10 | 219.40 | 55.08 | 98.08 | 152.55 | 0.601 | 12.3 | Shadow | 52 | 40 | | |
| 2.40 | 219.70 | 55.12 | 98.09 | 152.55 | 0.657 | 12.6 | Shadow | 52 | 40 | | |

Barrier Calculations based on MRC/CNRC model.

HS = 211.45 (ELEVATION AT NOISE SOURCE)
 HR = 219.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 98 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ MB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

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LOCATION: Lot 19/5B - UNITED CHURCH

Starting Barrier Height above Ground = 0 ft.
 Ground Elevation at Base of Noise Barrier = 217.3 ft.
 Effective Noise Source Height above Ground = 2.25 ft. As Per MTC Method
 Ground Elevation at Source = 209.2 ft.
 Effective Noise Receiver Height above ground = 1.5 ft.
 Ground Elevation at base of receiving point = 218 ft.
 Horizontal Distance from Noise Source to Barrier = 54.5 ft.
 Horizontal Distance from Barrier to Receiver = 30 ft.
 Frequency of the Noise = 500 Hz

| BH | | LED LEG | | | | | | | | | |
|-------|--------|---------|-------|-------|-------|------|--------|----|----|--|--|
| ABOVE | MB | A | B | C | PLD | ATT. | ZONE | MB | MB | | |
| P.L. | | | | | | | | | | | |
| 0.00 | 217.30 | 54.81 | 30.08 | 84.88 | 0.011 | 5.3 | Shadow | 56 | 51 | | |
| 0.30 | 217.60 | 54.85 | 30.06 | 84.88 | 0.033 | 5.7 | Shadow | 56 | 50 | | |
| 0.60 | 217.90 | 54.88 | 30.04 | 84.88 | 0.040 | 6.2 | Shadow | 56 | 50 | | |
| 0.90 | 218.20 | 54.92 | 30.03 | 84.88 | 0.062 | 6.7 | Shadow | 56 | 49 | | |
| 1.20 | 218.50 | 54.95 | 30.02 | 84.88 | 0.088 | 7.2 | Shadow | 56 | 49 | | |
| 1.50 | 218.80 | 54.99 | 30.01 | 84.88 | 0.119 | 7.8 | Shadow | 56 | 48 | | |
| 1.80 | 219.10 | 55.03 | 30.00 | 84.88 | 0.154 | 8.3 | Shadow | 56 | 48 | | |
| 2.10 | 219.40 | 55.08 | 30.00 | 84.88 | 0.194 | 8.9 | Shadow | 56 | 47 | | |
| 2.40 | 219.70 | 55.12 | 30.00 | 84.88 | 0.239 | 9.4 | Shadow | 56 | 47 | | |
| 2.70 | 220.00 | 55.17 | 30.00 | 84.88 | 0.288 | 9.8 | Shadow | 56 | 46 | | |

Barrier Calculations based on MRC/CNRC model.

HS = 211.45 (ELEVATION AT NOISE SOURCE)
 HR = 219.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 30 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ MB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 19/ND - UNITED CHURCH

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 217.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 218 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 30 M.
 Frequency of the Noise = 500 Hz

| NH | | | | | | | | LED | LED |
|-------|--------|-------|-------|-------|-------|------|--------|-----|-----|
| ABOVE | NB | A | B | C | PLD | ATT. | ZONE | NB | WB |
| P.L. | | | | | | | | | |
| 0.00 | 217.30 | 26.16 | 30.08 | 56.08 | 0.162 | 8.4 | Shadow | 39 | 50 |
| 0.30 | 217.60 | 26.23 | 30.06 | 56.06 | 0.210 | 9.0 | Shadow | 39 | 50 |
| 0.60 | 217.90 | 26.30 | 30.04 | 56.00 | 0.265 | 9.6 | Shadow | 39 | 49 |
| 0.90 | 218.20 | 26.38 | 30.03 | 56.00 | 0.326 | 10.2 | Shadow | 39 | 49 |

Barrier Calculations based on MRC/CWMC model.

HS = 211.43 (ELEVATION AT NOISE SOURCE)
 NR = 219.5 (ELEVATION AT RECEIVING POINT)
 NH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MM41.
 DSR = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 30 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 21/SB - CUTTS

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 210.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 15B M.
 Frequency of the Noise = 500 Hz

| NH | | | | | | | | LED | LED |
|-------|--------|-------|--------|--------|-------|------|--------|-----|-----|
| ABOVE | NB | A | B | C | PLD | ATT. | ZONE | NB | WB |
| P.L. | | | | | | | | | |
| 0.00 | 214.90 | 25.73 | 158.03 | 183.50 | 0.258 | 9.6 | Shadow | 51 | 41 |
| 0.30 | 215.20 | 25.77 | 158.03 | 183.50 | 0.306 | 10.0 | Shadow | 51 | 41 |

Barrier Calculations based on MRC/CWMC model.

HS = 211.43 (ELEVATION AT NOISE SOURCE)
 NR = 212 (ELEVATION AT RECEIVING POINT)
 NH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MM41.
 DSR = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 150 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 21/ND - CUTTS

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 210.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 158 M.
 Frequency of the Noise = 500 Hz

| BH | LEQ LEQ | | | | | | | | |
|---------------|---------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO |
| 0.00 | 214.90 | 54.61 | 158.03 | 212.50 | 0.135 | 8.0 | Shadow | 50 | 42 |
| 0.30 | 215.20 | 54.63 | 158.03 | 212.50 | 0.161 | 8.4 | Shadow | 50 | 42 |
| 0.60 | 215.50 | 54.65 | 158.04 | 212.50 | 0.188 | 8.8 | Shadow | 50 | 41 |
| 0.90 | 215.80 | 54.67 | 158.05 | 212.50 | 0.218 | 9.1 | Shadow | 50 | 41 |
| 1.20 | 216.10 | 54.70 | 158.05 | 212.50 | 0.251 | 9.5 | Shadow | 50 | 41 |

Barrier Calculations based on MRC/CMHC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
 MR = 212 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 158 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 22/SB - LAMBERT

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 211.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 198 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | LEQ LEQ | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | NO | NO |
| 0.00 | 214.90 | 25.73 | 198.01 | 223.51 | 0.236 | 9.3 | Shadow | 50 | 40 |
| 0.30 | 215.20 | 25.77 | 198.01 | 223.51 | 0.281 | 9.8 | Shadow | 50 | 40 |

Barrier Calculations based on MRC/CMHC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
 MR = 213 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NO = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 198 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 22/NB - LAMBERT

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 211.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 198 M.
 Frequency of the Noise = 500 Hz

| BM | HB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.90 | 54.61 | 198.01 | 252.50 | 0.113 | 7.7 | Shadow | 49 | 41 |
| 0.30 | 215.20 | 54.67 | 198.01 | 252.50 | 0.136 | 8.1 | Shadow | 49 | 41 |
| 0.60 | 215.50 | 54.65 | 198.02 | 252.50 | 0.161 | 8.4 | Shadow | 49 | 40 |
| 0.90 | 215.80 | 54.67 | 198.02 | 252.50 | 0.188 | 8.8 | Shadow | 49 | 40 |
| 1.20 | 216.10 | 54.70 | 198.02 | 252.50 | 0.218 | 9.1 | Shadow | 49 | 40 |

Barrier Calculations based on NRC/CMHC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 213 (ELEVATION AT RECEIVING POINT)
 BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DBS = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDd NMAI.
 DBS = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 198 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 23/SB - RODGERS

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 240 M.
 Frequency of the Noise = 500 Hz

| BM | HB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.90 | 25.73 | 240.00 | 265.51 | 0.222 | 9.2 | Shadow | 49 | 40 |
| 0.30 | 215.20 | 25.77 | 240.00 | 265.51 | 0.265 | 9.6 | Shadow | 49 | 39 |
| 0.60 | 215.50 | 25.82 | 240.00 | 265.51 | 0.312 | 10.1 | Shadow | 49 | 39 |

Barrier Calculations based on NRC/CMHC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 214 (ELEVATION AT RECEIVING POINT)
 BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DBS = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDd NMAI.
 DBS = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 240 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 23/ND - RODGERS.

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 240 M.
 Frequency of the Noise = 500 Hz

| BN | | | | | | | | | | LED LED | |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|---------|--|
| ABOVE P.L. | NR | A | B | C | PLD | ATT. | ZONE | NR | NR | | |
| 0.00 | 214.90 | 54.61 | 240.00 | 294.51 | 0.100 | 7.5 | Shadow | 48 | 41 | | |
| 0.30 | 215.20 | 54.63 | 240.00 | 294.51 | 0.121 | 7.8 | Shadow | 48 | 40 | | |
| 0.60 | 215.50 | 54.65 | 240.00 | 294.51 | 0.144 | 8.2 | Shadow | 48 | 40 | | |
| 0.90 | 215.80 | 54.67 | 240.01 | 294.51 | 0.169 | 8.5 | Shadow | 48 | 40 | | |
| 1.20 | 216.10 | 54.70 | 240.01 | 294.51 | 0.196 | 8.9 | Shadow | 48 | 39 | | |
| 1.50 | 216.40 | 54.72 | 240.01 | 294.51 | 0.225 | 9.2 | Shadow | 48 | 39 | | |
| 1.80 | 216.70 | 54.75 | 240.02 | 294.51 | 0.256 | 9.5 | Shadow | 48 | 39 | | |

Barrier Calculations based on NRC/CNHC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 214 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MM41.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 240 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 24/SD - SINCLAIR

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per NTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 270 M.
 Frequency of the Noise = 500 Hz

| BN | | | | | | | | | | LED LED | |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|---------|--|
| ABOVE P.L. | NR | A | B | C | PLD | ATT. | ZONE | NR | NR | | |
| 0.00 | 214.90 | 25.73 | 270.00 | 295.51 | 0.223 | 9.2 | Shadow | 48 | 39 | | |
| 0.30 | 215.20 | 25.77 | 270.00 | 295.51 | 0.266 | 9.6 | Shadow | 48 | 38 | | |
| 0.60 | 215.50 | 25.82 | 270.00 | 295.51 | 0.313 | 10.1 | Shadow | 48 | 38 | | |

Barrier Calculations based on NRC/CNHC model.

NS = 211.45 (ELEVATION AT NOISE SOURCE)
 NR = 214 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MM41.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 270 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 24/ND - SINCLAIR

Starting Barrier Height above Ground = 0 M.
Ground Elevation at Base of Noise Barrier = 214.9 M.
Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
Ground Elevation at Source = 209.2 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 212.5 M.
Horizontal Distance from Noise Source to Barrier = 54.5 M.
Horizontal Distance from Barrier to Receiver = 270 M.
Frequency of the Noise = 500 Hz

| BH | LED LEB | | | | | | | |
|---------------|---------|-------|--------|--------|-------|------|--------|-------|
| ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | NO NO |
| 0.00 | 214.90 | 54.61 | 270.00 | 324.51 | 0.101 | 7.5 | Shadow | 48 40 |
| 0.30 | 215.20 | 54.63 | 270.00 | 324.51 | 0.122 | 7.8 | Shadow | 48 40 |
| 0.60 | 215.50 | 54.65 | 270.00 | 324.51 | 0.144 | 8.2 | Shadow | 48 39 |
| 0.90 | 215.80 | 54.67 | 270.01 | 324.51 | 0.169 | 8.5 | Shadow | 48 39 |
| 1.20 | 216.10 | 54.70 | 270.01 | 324.51 | 0.196 | 8.9 | Shadow | 48 39 |
| 1.50 | 216.40 | 54.72 | 270.01 | 324.51 | 0.225 | 9.2 | Shadow | 48 38 |
| 1.80 | 216.70 | 54.75 | 270.01 | 324.51 | 0.256 | 9.5 | Shadow | 48 38 |
| 2.10 | 217.00 | 54.78 | 270.02 | 324.51 | 0.299 | 9.8 | Shadow | 48 38 |

Barrier Calculations based on NRC/CNIC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
NR = 214 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
HD = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD_{REF} INMIL.
DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DSR = 270 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEB NO = LEB (DBA) AT RECEIVER NO BARRIER.
LEB NO = LEB (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 25/SB - DE BOER

Starting Barrier Height above Ground = 0 M.
Ground Elevation at Base of Noise Barrier = 214.9 M.
Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
Ground Elevation at Source = 209.2 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 212.5 M.
Horizontal Distance from Noise Source to Barrier = 25.5 M.
Horizontal Distance from Barrier to Receiver = 300 M.
Frequency of the Noise = 500 Hz

| BH | LED LEB | | | | | | | |
|---------------|---------|-------|--------|--------|-------|------|--------|-------|
| ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | NO NO |
| 0.00 | 214.90 | 25.73 | 300.00 | 325.51 | 0.224 | 9.2 | Shadow | 48 38 |
| 0.30 | 215.20 | 25.77 | 300.00 | 325.51 | 0.267 | 9.6 | Shadow | 48 38 |

Barrier Calculations based on NRC/CNIC model.

MS = 211.45 (ELEVATION AT NOISE SOURCE)
NR = 214 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
HD = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD_{REF} INMIL.
DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DSR = 300 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEB NO = LEB (DBA) AT RECEIVER NO BARRIER.
LEB NO = LEB (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 25/NB — DEBOER

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214.9 M.
 Effective Noise Source Height above Ground = 2.25 M. As Per MTC Method
 Ground Elevation at Source = 209.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 300 M.
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LEQ | LEQ |
|-------|--------|-------|--------|--------|-------|------|--------|-----|-----|
| ABOVE | | | | | | | | NB | WB |
| P.L. | | | | | | | | | |
| 0.00 | 214.90 | 54.61 | 300.00 | 354.51 | 0.101 | 7.5 | Shadow | 47 | 40 |
| 0.30 | 215.20 | 54.63 | 300.00 | 354.51 | 0.122 | 7.0 | Shadow | 47 | 39 |
| 0.60 | 215.50 | 54.65 | 300.00 | 354.51 | 0.145 | 6.2 | Shadow | 47 | 39 |
| 0.90 | 215.80 | 54.67 | 300.01 | 354.51 | 0.170 | 5.5 | Shadow | 47 | 38 |
| 1.20 | 216.10 | 54.70 | 300.01 | 354.51 | 0.196 | 4.9 | Shadow | 47 | 38 |
| 1.50 | 216.40 | 54.72 | 300.01 | 354.51 | 0.225 | 4.2 | Shadow | 47 | 38 |

Barrier Calculations based on NRC/CNRC model.

HS = 211.45 (ELEVATION AT NOISE SOURCE)
 HR = 214 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD & WAT.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 300 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ WB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 50/SB — SCHOOL

Starting Barrier Height above Ground = 0 Meter(s)
 Ground Elevation at Base of Noise Barrier = 214 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC method.
 Ground Elevation at Source = 209.2 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 214 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 25.5 Meter(s)
 Horizontal Distance from Barrier to Receiver = 96 Meter(s)
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LEQ | LEQ |
|-------|--------|-------|-------|--------|-------|------|--------|-----|-----|
| ABOVE | | | | | | | | NB | WB |
| P.L. | | | | | | | | | |
| 0.00 | 214.00 | 25.60 | 96.01 | 121.56 | 0.052 | 6.3 | Shadow | 54 | 48 |
| 0.30 | 214.30 | 25.63 | 96.01 | 121.56 | 0.077 | 7.0 | Shadow | 54 | 47 |
| 0.60 | 214.60 | 25.66 | 96.00 | 121.56 | 0.105 | 7.5 | Shadow | 54 | 46 |
| 0.90 | 214.90 | 25.69 | 96.00 | 121.56 | 0.138 | 8.1 | Shadow | 54 | 46 |
| 1.20 | 215.20 | 25.73 | 96.00 | 121.56 | 0.175 | 8.6 | Shadow | 54 | 45 |
| 1.50 | 215.50 | 25.77 | 96.00 | 121.56 | 0.216 | 9.1 | Shadow | 54 | 45 |
| 1.80 | 215.80 | 25.82 | 96.00 | 121.56 | 0.262 | 9.6 | Shadow | 54 | 44 |
| 2.10 | 216.10 | 25.87 | 96.00 | 121.56 | 0.312 | 10.1 | Shadow | 54 | 44 |
| 2.40 | 216.40 | 25.92 | 96.00 | 121.56 | 0.367 | 10.6 | Shadow | 54 | 43 |
| 2.70 | 216.70 | 25.98 | 96.01 | 121.56 | 0.426 | 11.1 | Shadow | 54 | 43 |
| 3.00 | 217.00 | 26.03 | 96.01 | 121.56 | 0.489 | 11.6 | Shadow | 54 | 42 |
| 3.30 | 217.30 | 26.10 | 96.02 | 121.56 | 0.556 | 12.0 | Shadow | 54 | 42 |
| 3.60 | 217.60 | 26.16 | 96.02 | 121.56 | 0.620 | 12.4 | Shadow | 54 | 42 |

Barrier Calculations based on NRC/CNRC model.

HS = 211.75 (ELEVATION AT NOISE SOURCE)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 HR = 215.5 (ELEVATION AT RECEIVING POINT)
 NB = ELEVATION AT TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 ATT = BARRIER ATTENUATION REFERENCE PLD & WAT.
 DBR = 96 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ WB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 50/ND - SCHOOL

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M. As Per MTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 214 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 96 M.
 Frequency of the Noise = 500 Hz

| BM | HD | A | B | C | PLD | ATT. | ZONE | WB | WB |
|------------|--------|-------|-------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.00 | 54.35 | 96.01 | 150.55 | 0.011 | 5.4 | Shadow | 52 | 47 |
| 0.30 | 214.30 | 54.56 | 96.01 | 150.55 | 0.020 | 5.4 | Shadow | 52 | 47 |
| 0.60 | 214.60 | 54.57 | 96.00 | 150.55 | 0.032 | 6.0 | Shadow | 52 | 46 |
| 0.90 | 214.90 | 54.99 | 96.00 | 150.55 | 0.046 | 6.3 | Shadow | 52 | 46 |
| 1.20 | 215.20 | 54.61 | 96.00 | 150.55 | 0.063 | 6.7 | Shadow | 52 | 46 |
| 1.50 | 215.50 | 54.63 | 96.00 | 150.55 | 0.082 | 7.1 | Shadow | 52 | 45 |
| 1.80 | 215.80 | 54.65 | 96.00 | 150.55 | 0.104 | 7.5 | Shadow | 52 | 45 |
| 2.10 | 216.10 | 54.67 | 96.00 | 150.55 | 0.128 | 7.9 | Shadow | 52 | 44 |
| 2.40 | 216.40 | 54.70 | 96.00 | 150.55 | 0.156 | 8.3 | Shadow | 52 | 44 |
| 2.70 | 216.70 | 54.72 | 96.01 | 150.55 | 0.185 | 8.7 | Shadow | 52 | 44 |
| 3.00 | 217.00 | 54.75 | 96.01 | 150.55 | 0.217 | 9.1 | Shadow | 52 | 43 |
| 3.30 | 217.30 | 54.78 | 96.02 | 150.55 | 0.252 | 9.5 | Shadow | 52 | 43 |
| 3.60 | 217.60 | 54.81 | 96.02 | 150.55 | 0.289 | 9.8 | Shadow | 52 | 42 |
| 3.90 | 217.90 | 54.85 | 96.03 | 150.55 | 0.329 | 10.3 | Shadow | 52 | 42 |
| 4.20 | 218.20 | 54.88 | 96.04 | 150.55 | 0.372 | 10.7 | Shadow | 52 | 42 |

Barrier Calculations based on MRC/CNRC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 215.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 96 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ WB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 51/SD - SMTH

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M. As Per MTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 170 M.
 Frequency of the Noise = 500 Hz

| BM | HD | A | B | C | PLD | ATT. | ZONE | WB | WB |
|------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.00 | 25.60 | 170.00 | 195.52 | 0.080 | 7.1 | Shadow | 51 | 44 |
| 0.30 | 214.30 | 25.63 | 170.00 | 195.52 | 0.108 | 7.6 | Shadow | 51 | 43 |
| 0.60 | 214.60 | 25.66 | 170.00 | 195.52 | 0.139 | 8.1 | Shadow | 51 | 42 |
| 0.90 | 214.90 | 25.69 | 170.00 | 195.52 | 0.175 | 8.6 | Shadow | 51 | 42 |
| 1.20 | 215.20 | 25.73 | 170.00 | 195.52 | 0.214 | 9.1 | Shadow | 51 | 42 |
| 1.50 | 215.50 | 25.77 | 170.00 | 195.52 | 0.258 | 9.5 | Shadow | 51 | 41 |
| 1.80 | 215.80 | 25.82 | 170.00 | 195.52 | 0.305 | 10.0 | Shadow | 51 | 41 |

Barrier Calculations based on MRC/CNRC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MMAL.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 170 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ WB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 51/ND - SMITH

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M. As Per NTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 170 M.
 Frequency of the Noise = 500 Hz

| BH | LED | | | | | | | LED | |
|------|---------------|-------|--------|--------|-------|------|--------|------|-------|
| | ABOVE P.L. | MB | A | B | C | PLD | ATT. | ZONE | MB MB |
| 0.00 | 214.00 | 54.55 | 170.00 | 224.52 | 0.030 | 5.9 | Shadow | 50 | 44 |
| 0.30 | 214.30 | 54.56 | 170.00 | 224.52 | 0.042 | 6.2 | Shadow | 50 | 44 |
| 0.60 | 214.60 | 54.57 | 170.00 | 224.52 | 0.058 | 6.6 | Shadow | 50 | 43 |
| 0.90 | 214.90 | 54.59 | 170.00 | 224.52 | 0.075 | 7.0 | Shadow | 50 | 43 |
| 1.20 | 215.20 | 54.61 | 170.00 | 224.52 | 0.094 | 7.3 | Shadow | 50 | 42 |
| 1.50 | 215.50 | 54.63 | 170.00 | 224.52 | 0.115 | 7.7 | Shadow | 50 | 42 |
| 1.80 | 215.80 | 54.65 | 170.00 | 224.52 | 0.138 | 8.1 | Shadow | 50 | 42 |
| 2.10 | 216.10 | 54.67 | 170.01 | 224.52 | 0.164 | 8.5 | Shadow | 50 | 41 |
| 2.40 | 216.40 | 54.70 | 170.01 | 224.52 | 0.192 | 8.8 | Shadow | 50 | 41 |
| 2.70 | 216.70 | 54.72 | 170.01 | 224.52 | 0.222 | 9.2 | Shadow | 50 | 41 |
| 3.00 | 217.00 | 54.75 | 170.02 | 224.52 | 0.254 | 9.5 | Shadow | 50 | 40 |
| 3.30 | 217.30 | 54.78 | 170.02 | 224.52 | 0.280 | 9.8 | Shadow | 50 | 40 |
| 3.60 | 217.60 | 54.81 | 170.03 | 224.52 | 0.324 | 10.2 | Shadow | 50 | 40 |

Barrier Calculations based on NRC/CMC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 214.5 (ELEVATION AT RECEIVING POINT)
 MH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MD = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 WMA1.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 170 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED MB = LED (DBA) AT RECEIVER NO BARRIER.
 LED MB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 52/SD - WALKINSHAW

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M. As Per NTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 202 M.
 Frequency of the Noise = 500 Hz

| BH | LED | | | | | | | LED | |
|------|---------------|-------|--------|--------|-------|------|--------|------|-------|
| | ABOVE P.L. | MB | A | B | C | PLD | ATT. | ZONE | MB MB |
| 0.00 | 214.00 | 25.60 | 202.00 | 227.52 | 0.083 | 7.1 | Shadow | 50 | 43 |
| 0.30 | 214.30 | 25.63 | 202.00 | 227.52 | 0.111 | 7.6 | Shadow | 50 | 42 |
| 0.60 | 214.60 | 25.66 | 202.00 | 227.52 | 0.142 | 8.1 | Shadow | 50 | 42 |
| 0.90 | 214.90 | 25.69 | 202.00 | 227.52 | 0.178 | 8.6 | Shadow | 50 | 41 |
| 1.20 | 215.20 | 25.73 | 202.00 | 227.52 | 0.217 | 9.1 | Shadow | 50 | 41 |
| 1.50 | 215.50 | 25.77 | 202.00 | 227.52 | 0.260 | 9.6 | Shadow | 50 | 40 |
| 1.80 | 215.80 | 25.82 | 202.00 | 227.52 | 0.307 | 10.1 | Shadow | 50 | 40 |

Barrier Calculations based on NRC/CMC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 214.5 (ELEVATION AT RECEIVING POINT)
 MH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MD = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 WMA1.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 202 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED MB = LED (DBA) AT RECEIVER NO BARRIER.
 LED MB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot S2/ND ← WALK IN SHAW

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 202 M.
 Frequency of the Noise = 500 Hz

| BH | LEG LEG | | | | | | | |
|------|------------|-------|--------|--------|-------|------|--------|-------|
| | ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE |
| 0.00 | 214.00 | 54.55 | 202.00 | 256.51 | 0.032 | 6.0 | Shadow | 49 43 |
| 0.30 | 214.30 | 54.56 | 202.00 | 256.51 | 0.045 | 6.3 | Shadow | 49 43 |
| 0.60 | 214.60 | 54.57 | 202.00 | 256.51 | 0.060 | 6.6 | Shadow | 49 42 |
| 0.90 | 214.90 | 54.59 | 202.00 | 256.51 | 0.077 | 7.0 | Shadow | 49 42 |
| 1.20 | 215.20 | 54.61 | 202.00 | 256.51 | 0.096 | 7.4 | Shadow | 49 42 |
| 1.50 | 215.50 | 54.63 | 202.00 | 256.51 | 0.117 | 7.7 | Shadow | 49 41 |
| 1.80 | 215.80 | 54.65 | 202.00 | 256.51 | 0.140 | 8.1 | Shadow | 49 41 |
| 2.10 | 216.10 | 54.67 | 202.01 | 256.51 | 0.165 | 8.5 | Shadow | 49 40 |
| 2.40 | 216.40 | 54.70 | 202.01 | 256.51 | 0.192 | 8.8 | Shadow | 49 40 |
| 2.70 | 216.70 | 54.72 | 202.01 | 256.51 | 0.222 | 9.2 | Shadow | 49 40 |
| 3.00 | 217.00 | 54.75 | 202.02 | 256.51 | 0.253 | 9.5 | Shadow | 49 39 |
| 3.30 | 217.30 | 54.78 | 202.02 | 256.51 | 0.287 | 9.8 | Shadow | 49 39 |
| 3.60 | 217.60 | 54.81 | 202.02 | 256.51 | 0.322 | 10.2 | Shadow | 49 39 |

Barrier Calculations based on MRC/CNHC model.

NS = 211.75 (ELEVATION AT NOISE SOURCE)
 NR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 ND = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD MMAT.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 202 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG ND = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG ND = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot S4/ND ← SWING

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 260 M.
 Frequency of the Noise = 500 Hz

| BH | LEG LEG | | | | | | | |
|------|------------|-------|--------|--------|-------|------|--------|-------|
| | ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE |
| 0.00 | 214.00 | 25.60 | 260.00 | 285.51 | 0.090 | 7.3 | Shadow | 40 41 |
| 0.30 | 214.30 | 25.63 | 260.00 | 285.51 | 0.118 | 7.8 | Shadow | 40 41 |
| 0.60 | 214.60 | 25.66 | 260.00 | 285.51 | 0.151 | 8.3 | Shadow | 40 40 |
| 0.90 | 214.90 | 25.69 | 260.00 | 285.51 | 0.186 | 8.8 | Shadow | 40 40 |
| 1.20 | 215.20 | 25.73 | 260.00 | 285.51 | 0.226 | 9.2 | Shadow | 40 39 |
| 1.50 | 215.50 | 25.77 | 260.00 | 285.51 | 0.270 | 9.7 | Shadow | 40 39 |
| 1.80 | 215.80 | 25.82 | 260.01 | 285.51 | 0.317 | 10.2 | Shadow | 40 38 |
| 2.10 | 216.10 | 25.87 | 260.01 | 285.51 | 0.368 | 10.7 | Shadow | 40 38 |

Barrier Calculations based on MRC/CNHC model.

NS = 211.75 (ELEVATION AT NOISE SOURCE)
 NR = 214 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 ND = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD MMAT.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 260 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG ND = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG ND = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 54/ND - SWING.

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per AEC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 260 M.
 Frequency of the Noise = 500 Hz

| BM | HD | A | B | C | PLD | ATT. | ZONE | ND | LD |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.00 | 54.55 | 260.00 | 314.51 | 0.038 | 6.1 | Shadow | 48 | 42 |
| 0.30 | 214.30 | 54.56 | 260.00 | 314.51 | 0.052 | 6.5 | Shadow | 48 | 41 |
| 0.60 | 214.60 | 54.57 | 260.00 | 314.51 | 0.067 | 6.8 | Shadow | 48 | 41 |
| 0.90 | 214.90 | 54.59 | 260.00 | 314.51 | 0.084 | 7.2 | Shadow | 48 | 41 |
| 1.20 | 215.20 | 54.61 | 260.00 | 314.51 | 0.104 | 7.5 | Shadow | 48 | 40 |
| 1.50 | 215.50 | 54.63 | 260.00 | 314.51 | 0.125 | 7.9 | Shadow | 48 | 40 |
| 1.80 | 215.80 | 54.65 | 260.01 | 314.51 | 0.148 | 8.2 | Shadow | 48 | 39 |
| 2.10 | 216.10 | 54.67 | 260.01 | 314.51 | 0.174 | 8.6 | Shadow | 48 | 39 |
| 2.40 | 216.40 | 54.70 | 260.01 | 314.51 | 0.201 | 8.9 | Shadow | 48 | 39 |
| 2.70 | 216.70 | 54.72 | 260.01 | 314.51 | 0.230 | 9.3 | Shadow | 48 | 38 |
| 3.00 | 217.00 | 54.75 | 260.02 | 314.51 | 0.262 | 9.6 | Shadow | 48 | 38 |
| 3.30 | 217.30 | 54.78 | 260.02 | 314.51 | 0.295 | 9.9 | Shadow | 48 | 38 |

Barrier Calculations based on NRC/CNRC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 214 (ELEVATION AT RECEIVING POINT)
 BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MD = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD₀ MMAT.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 260 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ ND = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MD = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 57/SD - BATES

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per AEC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 211.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 348 M.
 Frequency of the Noise = 500 Hz

| BM | HD | A | B | C | PLD | ATT. | ZONE | ND | LD |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 0.00 | 214.00 | 25.60 | 348.00 | 373.50 | 0.098 | 7.4 | Shadow | 47 | 39 |
| 0.30 | 214.30 | 25.63 | 348.00 | 373.50 | 0.127 | 7.9 | Shadow | 47 | 39 |
| 0.60 | 214.60 | 25.66 | 348.00 | 373.50 | 0.160 | 8.4 | Shadow | 47 | 38 |
| 0.90 | 214.90 | 25.69 | 348.01 | 373.50 | 0.197 | 8.9 | Shadow | 47 | 38 |
| 1.20 | 215.20 | 25.73 | 348.01 | 373.50 | 0.237 | 9.3 | Shadow | 47 | 37 |
| 1.50 | 215.50 | 25.77 | 348.01 | 373.50 | 0.281 | 9.8 | Shadow | 47 | 37 |

Barrier Calculations based on NRC/CNRC model.

MS = 211.75 (ELEVATION AT NOISE SOURCE)
 MR = 213 (ELEVATION AT RECEIVING POINT)
 BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MD = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD₀ MMAT.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 348 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ ND = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MD = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 57/ND - BATES

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 214 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 209.5 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 211.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 348 M.
 Frequency of the Noise = 500 Hz

| BH | LED LED | | | | | | |
|------|------------|-------|--------|--------|-------|------|--------------|
| | ABOVE P.L. | NO | A | B | C | PLD | ATT. ZONE |
| 0.00 | 214.00 | 54.55 | 348.00 | 402.50 | 0.046 | 6.3 | Shadow 46 40 |
| 0.30 | 214.30 | 54.56 | 348.00 | 402.50 | 0.060 | 6.7 | Shadow 46 40 |
| 0.60 | 214.60 | 54.57 | 348.00 | 402.50 | 0.076 | 7.0 | Shadow 46 39 |
| 0.90 | 214.90 | 54.58 | 348.01 | 402.50 | 0.094 | 7.3 | Shadow 46 39 |
| 1.20 | 215.20 | 54.61 | 348.01 | 402.50 | 0.114 | 7.7 | Shadow 46 38 |
| 1.50 | 215.50 | 54.62 | 348.01 | 402.50 | 0.136 | 8.1 | Shadow 46 38 |
| 1.80 | 215.80 | 54.65 | 348.01 | 402.50 | 0.160 | 8.4 | Shadow 46 38 |
| 2.10 | 216.10 | 54.67 | 348.01 | 402.50 | 0.185 | 8.7 | Shadow 46 37 |
| 2.40 | 216.40 | 54.70 | 348.02 | 402.50 | 0.213 | 9.1 | Shadow 46 37 |
| 2.70 | 216.70 | 54.72 | 348.02 | 402.50 | 0.242 | 9.4 | Shadow 46 37 |
| 3.00 | 217.00 | 54.75 | 348.02 | 402.50 | 0.273 | 9.7 | Shadow 46 37 |
| 3.30 | 217.30 | 54.78 | 348.03 | 402.50 | 0.306 | 10.0 | Shadow 46 36 |
| 3.60 | 217.60 | 54.81 | 348.03 | 402.50 | 0.342 | 10.4 | Shadow 46 36 |

Barrier Calculations based on NRC/CWMC model.

NS = 211.75 (ELEVATION AT NOISE SOURCE)
 NR = 213 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 ND = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD6 MMAT.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DSB = 348 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED ND = LED (DBA) AT RECEIVER NO BARRIER.
 LED NB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 80A/SD - Dixon

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 216.1 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method.
 Ground Elevation at Source = 216.1 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 213 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 240 M.
 Frequency of the Noise = 500 Hz

| BH | LED LED | | | | | | |
|------|------------|-------|--------|--------|-------|-----|--------------|
| | ABOVE P.L. | NO | A | B | C | PLD | ATT. ZONE |
| 1.00 | 217.10 | 25.53 | 240.01 | 265.53 | 0.017 | 4.3 | Bright 49 45 |
| 1.30 | 217.40 | 25.52 | 240.02 | 265.53 | 0.007 | 4.7 | Bright 49 44 |
| 1.60 | 217.70 | 25.51 | 240.02 | 265.53 | 0.002 | 4.9 | Bright 49 44 |
| 1.90 | 218.00 | 25.50 | 240.03 | 265.53 | 0.000 | 5.0 | Shadow 49 44 |
| 2.20 | 218.30 | 25.50 | 240.03 | 265.53 | 0.002 | 5.0 | Shadow 49 44 |
| 2.50 | 218.60 | 25.50 | 240.04 | 265.53 | 0.008 | 5.2 | Shadow 49 44 |

Barrier Calculations based on NRC/CWMC model.

NS = 218.35 (ELEVATION AT NOISE SOURCE)
 NR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 ND = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD6 MMAT.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DSB = 240 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED ND = LED (DBA) AT RECEIVER NO BARRIER.
 LED NB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: 004/NB - Dixon

| | | |
|--|---------|----------------------|
| Starting Barrier Height above Ground | = 1 | N. |
| Ground Elevation at Base of Noise Barrier | = 216.1 | N. |
| Effective Noise Source Height above Ground | = 2.25 | N.As Per NTC Method. |
| Ground Elevation at Source | = 216.1 | N. |
| Effective Noise Receiver Height above ground | = 1.5 | N. |
| Ground Elevation at base of receiving point | = 213 | N. |
| Horizontal Distance from Noise Source to Barrier | = 54.5 | N. |
| Horizontal Distance from Barrier to Receiver | = 240 | N. |
| Frequency of the Noise | = 500 | Hz |

| ABOVE P.L. | BH | | | | | | | LED LED | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| | NB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| 1.00 | 217.10 | 54.51 | 240.01 | 294.53 | 0.003 | 4.8 | Bright | 48 | 43 |
| 1.30 | 217.40 | 54.51 | 240.02 | 294.53 | 0.001 | 4.9 | Bright | 48 | 43 |
| 1.60 | 217.70 | 54.50 | 240.02 | 294.53 | 0.000 | 5.0 | Shadow | 48 | 43 |
| 1.90 | 218.00 | 54.50 | 240.03 | 294.53 | 0.001 | 5.0 | Shadow | 48 | 43 |
| 2.20 | 218.30 | 54.50 | 240.03 | 294.53 | 0.005 | 5.1 | Shadow | 48 | 43 |
| 2.50 | 218.60 | 54.50 | 240.04 | 294.53 | 0.010 | 5.3 | Shadow | 48 | 43 |

Barrier Calculations based on NRC/CNRC model.

HS = 218.35 (ELEVATION AT NOISE SOURCE)
 HR = 214.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD# NHA1.
 DSR = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 240 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 96/SB - LEEMING

| | | |
|--|---------|---------------------|
| Starting Barrier Height above Ground | = 1 | N. |
| Ground Elevation at Base of Noise Barrier | = 219 | N. |
| Effective Noise Source Height above Ground | = 2.25 | N.As Per NTC Method |
| Ground Elevation at Source | = 219 | N. |
| Effective Noise Receiver Height above ground | = 1.5 | N. |
| Ground Elevation at base of receiving point | = 219.2 | N. |
| Horizontal Distance from Noise Source to Barrier | = 25.5 | N. |
| Horizontal Distance from Barrier to Receiver | = 145 | N. |
| Frequency of the Noise | = 500 | Hz |

| ABOVE P.L. | BH | | | | | | | LED LED | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| | NB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| 1.00 | 220.00 | 25.53 | 145.00 | 170.50 | 0.031 | 3.6 | Bright | 51 | 47 |
| 1.30 | 220.30 | 25.52 | 145.00 | 170.50 | 0.017 | 4.3 | Bright | 51 | 47 |
| 1.60 | 220.60 | 25.51 | 145.00 | 170.50 | 0.007 | 4.7 | Bright | 51 | 46 |
| 1.90 | 220.90 | 25.50 | 145.00 | 170.50 | 0.002 | 4.9 | Bright | 51 | 46 |
| 2.20 | 221.20 | 25.50 | 145.00 | 170.50 | 0.000 | 5.0 | Shadow | 51 | 46 |
| 2.50 | 221.50 | 25.50 | 145.00 | 170.50 | 0.003 | 5.1 | Shadow | 51 | 46 |
| 2.80 | 221.80 | 25.51 | 145.00 | 170.50 | 0.009 | 5.3 | Shadow | 51 | 46 |
| 3.10 | 222.10 | 25.51 | 145.01 | 170.50 | 0.020 | 5.6 | Shadow | 51 | 45 |
| 3.40 | 222.40 | 25.53 | 145.01 | 170.50 | 0.035 | 6.0 | Shadow | 51 | 45 |
| 3.70 | 222.70 | 25.54 | 145.01 | 170.50 | 0.054 | 6.5 | Shadow | 51 | 44 |
| 4.00 | 223.00 | 25.56 | 145.02 | 170.50 | 0.077 | 7.0 | Shadow | 51 | 44 |
| 4.30 | 223.30 | 25.58 | 145.02 | 170.50 | 0.105 | 7.5 | Shadow | 51 | 43 |
| 4.60 | 223.60 | 25.61 | 145.03 | 170.50 | 0.136 | 8.1 | Shadow | 51 | 43 |
| 4.90 | 223.90 | 25.64 | 145.04 | 170.50 | 0.172 | 8.6 | Shadow | 51 | 42 |
| 5.20 | 224.20 | 25.67 | 145.04 | 170.50 | 0.211 | 9.1 | Shadow | 51 | 42 |

Barrier Calculations based on NRC/CNRC model.

HS = 221.25 (ELEVATION AT NOISE SOURCE)
 HR = 220.7 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD# NHA1.
 DSR = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DRR = 145 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES *****

LOCATION: Lot 96/ND - LEAMING

Starting Barrier Height above Ground = 1 M.
Ground Elevation at Base of Noise Barrier = 219 M.
Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
Ground Elevation at Source = 219 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 219.2 M.
Horizontal Distance from Noise Source to Barrier = 54.5 M.
Horizontal Distance from Barrier to Receiver = 145 M.
Frequency of the Noise = 500 Hz

| BM | ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND | WB |
|----|------------|--------|-------|--------|--------|-------|------|--------|----|----|
| | | | | | | | | | | |
| | 1.00 | 220.00 | 54.51 | 145.00 | 199.50 | 0.015 | 4.4 | Bright | 50 | 46 |
| | 1.30 | 220.30 | 54.51 | 145.00 | 199.50 | 0.008 | 4.7 | Bright | 50 | 45 |
| | 1.60 | 220.60 | 54.50 | 145.00 | 199.50 | 0.003 | 4.8 | Bright | 50 | 45 |
| | 1.90 | 220.90 | 54.50 | 145.00 | 199.50 | 0.001 | 4.9 | Bright | 50 | 45 |
| | 2.20 | 221.20 | 54.50 | 145.00 | 199.50 | 0.000 | 5.0 | Shadow | 50 | 45 |
| | 2.50 | 221.50 | 54.50 | 145.00 | 199.50 | 0.002 | 5.0 | Shadow | 50 | 45 |
| | 2.80 | 221.80 | 54.50 | 145.00 | 199.50 | 0.006 | 5.2 | Shadow | 50 | 45 |
| | 3.10 | 222.10 | 54.51 | 145.01 | 199.50 | 0.012 | 5.4 | Shadow | 50 | 45 |
| | 3.40 | 222.40 | 54.51 | 145.01 | 199.50 | 0.021 | 5.7 | Shadow | 50 | 44 |
| | 3.70 | 222.70 | 54.52 | 145.01 | 199.50 | 0.032 | 6.0 | Shadow | 50 | 44 |
| | 4.00 | 223.00 | 54.53 | 145.02 | 199.50 | 0.046 | 6.3 | Shadow | 50 | 44 |
| | 4.30 | 223.30 | 54.54 | 145.02 | 199.50 | 0.061 | 6.7 | Shadow | 50 | 43 |
| | 4.60 | 223.60 | 54.55 | 145.03 | 199.50 | 0.079 | 7.1 | Shadow | 50 | 43 |
| | 4.90 | 223.90 | 54.56 | 145.04 | 199.50 | 0.099 | 7.4 | Shadow | 50 | 43 |
| | 5.20 | 224.20 | 54.58 | 145.04 | 199.50 | 0.121 | 7.8 | Shadow | 50 | 42 |
| | 5.50 | 224.50 | 54.60 | 145.05 | 199.50 | 0.146 | 8.2 | Shadow | 50 | 42 |

Barrier Calculations based on MRC/CNMC model.

MS = 221.25 (ELEVATION AT NOISE SOURCE)
NR = 220.7 (ELEVATION AT RECEIVING POINT)
BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD IN MINS.
DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DBR = 145 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LED NB = LED (DBA) AT RECEIVER NO BARRIER.
LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES *****

LOCATION: Lot 97/SD - ZOLATURIK

Starting Barrier Height above Ground = 1 M.
Ground Elevation at Base of Noise Barrier = 219.0 M.
Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
Ground Elevation at Source = 219.0 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 220 M.
Horizontal Distance from Noise Source to Barrier = 25.5 M.
Horizontal Distance from Barrier to Receiver = 175 M.
Frequency of the Noise = 500 Hz

| BM | ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND | WB |
|----|------------|--------|-------|--------|--------|-------|------|--------|----|----|
| | | | | | | | | | | |
| | 1.00 | 220.80 | 25.53 | 175.00 | 200.50 | 0.031 | 3.6 | Bright | 50 | 46 |
| | 1.30 | 221.10 | 25.52 | 175.00 | 200.50 | 0.017 | 4.3 | Bright | 50 | 46 |
| | 1.60 | 221.40 | 25.51 | 175.00 | 200.50 | 0.008 | 4.7 | Bright | 50 | 45 |
| | 1.90 | 221.70 | 25.50 | 175.00 | 200.50 | 0.002 | 4.9 | Bright | 50 | 45 |
| | 2.20 | 222.00 | 25.50 | 175.00 | 200.50 | 0.000 | 5.0 | Shadow | 50 | 45 |
| | 2.50 | 222.30 | 25.50 | 175.00 | 200.50 | 0.002 | 5.0 | Shadow | 50 | 45 |
| | 2.80 | 222.60 | 25.51 | 175.00 | 200.50 | 0.009 | 5.3 | Shadow | 50 | 45 |
| | 3.10 | 222.90 | 25.51 | 175.01 | 200.50 | 0.019 | 5.6 | Shadow | 50 | 44 |
| | 3.40 | 223.20 | 25.53 | 175.01 | 200.50 | 0.023 | 6.0 | Shadow | 50 | 44 |
| | 3.70 | 223.50 | 25.54 | 175.01 | 200.50 | 0.052 | 6.5 | Shadow | 50 | 44 |
| | 4.00 | 223.80 | 25.56 | 175.02 | 200.50 | 0.074 | 7.0 | Shadow | 50 | 43 |
| | 4.30 | 224.10 | 25.58 | 175.02 | 200.50 | 0.101 | 7.5 | Shadow | 50 | 43 |
| | 4.60 | 224.40 | 25.61 | 175.02 | 200.50 | 0.131 | 8.0 | Shadow | 50 | 42 |
| | 4.90 | 224.70 | 25.64 | 175.03 | 200.50 | 0.166 | 8.5 | Shadow | 50 | 42 |

Barrier Calculations based on MRC/CNMC model.

MS = 222.05 (ELEVATION AT NOISE SOURCE)
NR = 221.5 (ELEVATION AT RECEIVING POINT)
BM = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD IN MINS.
DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DBR = 175 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LED NB = LED (DBA) AT RECEIVER NO BARRIER.
LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 97/ND - ZOLATURUK.

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 219.8 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 219.8 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 220 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 175 M.
 Frequency of the Noise = 500 Hz

| BH | LED LED | | | | | | | |
|------|------------|-------|--------|--------|-------|-----|--------|-------|
| | ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE |
| 1.00 | 220.80 | 54.51 | 175.00 | 229.50 | 0.015 | 4.4 | Bright | 50 46 |
| 1.30 | 221.10 | 54.51 | 175.00 | 229.50 | 0.008 | 4.7 | Bright | 50 45 |
| 1.60 | 221.40 | 54.50 | 175.00 | 229.50 | 0.003 | 4.8 | Bright | 50 45 |
| 1.90 | 221.70 | 54.50 | 175.00 | 229.50 | 0.001 | 4.9 | Bright | 50 45 |
| 2.20 | 222.00 | 54.50 | 175.00 | 229.50 | 0.000 | 5.0 | Shadow | 50 45 |
| 2.50 | 222.30 | 54.50 | 175.00 | 229.50 | 0.002 | 5.0 | Shadow | 50 45 |
| 2.80 | 222.60 | 54.50 | 175.00 | 229.50 | 0.006 | 5.2 | Shadow | 50 45 |
| 3.10 | 222.90 | 54.51 | 175.01 | 229.50 | 0.012 | 5.4 | Shadow | 50 45 |
| 3.40 | 223.20 | 54.51 | 175.01 | 229.50 | 0.020 | 5.6 | Shadow | 50 44 |
| 3.70 | 223.50 | 54.52 | 175.01 | 229.50 | 0.030 | 5.9 | Shadow | 50 44 |
| 4.00 | 223.80 | 54.53 | 175.02 | 229.50 | 0.043 | 6.2 | Shadow | 50 44 |
| 4.30 | 224.10 | 54.54 | 175.02 | 229.50 | 0.057 | 6.6 | Shadow | 50 43 |
| 4.60 | 224.40 | 54.55 | 175.02 | 229.50 | 0.074 | 7.0 | Shadow | 50 43 |
| 4.90 | 224.70 | 54.56 | 175.03 | 229.50 | 0.093 | 7.3 | Shadow | 50 43 |
| 5.20 | 225.00 | 54.58 | 175.04 | 229.50 | 0.114 | 7.7 | Shadow | 50 42 |
| 5.50 | 225.30 | 54.60 | 175.04 | 229.50 | 0.137 | 8.1 | Shadow | 50 42 |
| 5.80 | 225.60 | 54.62 | 175.05 | 229.50 | 0.163 | 8.4 | Shadow | 50 42 |

Barrier Calculations based on MRC/CNHC model.

NS = 222.05 (ELEVATION AT NOISE SOURCE)
 NR = 221.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN MMAL.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 175 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 98/5B - BUTIKOFER

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 219.8 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per MTC Method
 Ground Elevation at Source = 219.8 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 220 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 225 M.
 Frequency of the Noise = 500 Hz

| BH | LED LED | | | | | | | |
|------|------------|-------|--------|--------|-------|-----|--------|-------|
| | ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE |
| 1.00 | 220.80 | 25.53 | 225.00 | 250.50 | 0.031 | 3.4 | Bright | 46 42 |
| 1.30 | 221.10 | 25.52 | 225.00 | 250.50 | 0.017 | 4.3 | Bright | 46 42 |

Barrier Calculations based on MRC/CNHC model.

NS = 222.05 (ELEVATION AT NOISE SOURCE)
 NR = 221.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN MMAL.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 225 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 98/ND - BUTIMOFER.

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 219.0 M.
 Effective Noise Source Height above Ground = 2.25 M.As Per ITC Method
 Ground Elevation at Source = 219.0 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 220 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 225 M.
 Frequency of the Noise = 500 Hz

| BN | LEG LEG | | | | | | | |
|---------------|---------|-------|--------|--------|-------|------|--------|-------|
| ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND ND |
| 1.00 | 220.80 | 54.51 | 225.00 | 279.50 | 0.015 | 4.4 | Bright | 45 41 |
| 1.30 | 221.10 | 54.51 | 225.00 | 279.50 | 0.008 | 4.7 | Bright | 45 40 |
| 1.60 | 221.40 | 54.50 | 225.00 | 279.50 | 0.003 | 4.8 | Bright | 45 40 |
| 1.90 | 221.70 | 54.50 | 225.00 | 279.50 | 0.001 | 4.9 | Bright | 45 40 |
| 2.20 | 222.00 | 54.50 | 225.00 | 279.50 | 0.000 | 5.0 | Shadow | 45 40 |
| 2.50 | 222.30 | 54.50 | 225.00 | 279.50 | 0.001 | 5.0 | Shadow | 45 40 |
| 2.80 | 222.60 | 54.50 | 225.00 | 279.50 | 0.005 | 5.1 | Shadow | 45 40 |
| 3.10 | 222.90 | 54.51 | 225.00 | 279.50 | 0.010 | 5.3 | Shadow | 45 40 |

Barrier Calculations based on ITC/CNHC model.

MS = 222.05 (ELEVATION AT NOISE SOURCE)
 NR = 221.5 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN MBI.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DSB = 225 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG ND = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG NB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 108/SD - HOSSTEIN

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 215 M.
 Effective Noise Source Height above Ground = 2.25 M.As per ITC method
 Ground Elevation at Source = 215 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.6 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 253 M.
 Frequency of the Noise = 500 Hz

| BN | LEG LEG | | | | | | | |
|---------------|---------|-------|--------|--------|-------|------|--------|-------|
| ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND ND |
| 1.00 | 216.00 | 54.51 | 253.01 | 309.52 | 0.005 | 4.8 | Bright | 48 43 |
| 1.30 | 216.30 | 54.51 | 253.01 | 309.52 | 0.002 | 4.9 | Bright | 48 43 |
| 1.60 | 216.60 | 54.50 | 253.01 | 309.52 | 0.000 | 5.0 | Bright | 48 43 |
| 1.90 | 216.90 | 54.50 | 253.02 | 309.52 | 0.000 | 5.0 | Shadow | 48 43 |
| 2.20 | 217.20 | 54.50 | 253.02 | 309.52 | 0.003 | 5.1 | Shadow | 48 43 |
| 2.50 | 217.50 | 54.50 | 253.02 | 309.52 | 0.007 | 5.2 | Shadow | 48 43 |
| 2.80 | 217.80 | 54.50 | 253.03 | 309.52 | 0.014 | 5.4 | Shadow | 48 43 |
| 3.10 | 218.10 | 54.51 | 253.03 | 309.52 | 0.022 | 5.7 | Shadow | 48 42 |
| 3.40 | 218.40 | 54.51 | 253.04 | 309.52 | 0.032 | 6.0 | Shadow | 48 42 |
| 3.70 | 218.70 | 54.52 | 253.04 | 309.52 | 0.045 | 6.3 | Shadow | 48 42 |

Barrier Calculations based on ITC/CNHC model.

MS = 217.25 (ELEVATION AT NOISE SOURCE)
 NR = 214.1 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN MBI.
 DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DSB = 253 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEG ND = LEG (DBA) AT RECEIVER NO BARRIER.
 LEG NB = LEG (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 100/MB - HOSTEIN

Starting Barrier Height above Ground = 1 M.
 Ground Elevation at Base of Noise Barrier = 215 M.
 Effective Noise Source Height above Ground = 2.25 M.As per NTC method
 Ground Elevation at Source = 215 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 212.6 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 255 M.
 Frequency of the Noise = 500 Hz

| BN | MB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 1.00 | 216.00 | 25.53 | 255.01 | 200.52 | 0.020 | 4.1 | Bright | 48 | 44 |
| 1.30 | 216.30 | 25.52 | 255.01 | 200.52 | 0.009 | 4.6 | Bright | 48 | 43 |
| 1.60 | 216.60 | 25.51 | 255.01 | 200.52 | 0.003 | 4.9 | Bright | 48 | 43 |
| 1.90 | 216.90 | 25.50 | 255.02 | 200.52 | 0.000 | 5.0 | Bright | 48 | 43 |
| 2.20 | 217.20 | 25.50 | 255.02 | 200.52 | 0.001 | 5.0 | Shadow | 48 | 43 |
| 2.50 | 217.50 | 25.50 | 255.02 | 200.52 | 0.006 | 5.2 | Shadow | 48 | 43 |
| 2.80 | 217.80 | 25.51 | 255.03 | 200.52 | 0.015 | 5.5 | Shadow | 48 | 43 |
| 3.10 | 218.10 | 25.51 | 255.03 | 200.52 | 0.028 | 5.8 | Shadow | 48 | 42 |
| 3.40 | 218.40 | 25.53 | 255.04 | 200.52 | 0.044 | 6.3 | Shadow | 48 | 42 |

Barrier Calculations based on NRC/CHMC model.

NS = 217.25 (ELEVATION AT NOISE SOURCE)
 NR = 214.1 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDd MMAT.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 255 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NO = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 109/SB - ERNST

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 215 M.
 Effective Noise Source Height above Ground = 2.25 M.As per NTC method
 Ground Elevation at Source = 215 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 214.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 270 M.
 Frequency of the Noise = 500 Hz

| BN | MB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|---------------|--------|-------|--------|--------|-------|------|--------|----|----|
| ABOVE P.L. | | | | | | | | | |
| 2.00 | 217.00 | 25.50 | 270.00 | 245.50 | 0.002 | 4.9 | Bright | 48 | 43 |
| 2.30 | 217.30 | 25.50 | 270.00 | 245.50 | 0.000 | 5.0 | Bright | 48 | 43 |
| 2.60 | 217.60 | 25.50 | 270.00 | 245.50 | 0.002 | 5.0 | Shadow | 48 | 43 |
| 2.90 | 217.90 | 25.51 | 270.00 | 245.50 | 0.007 | 5.2 | Shadow | 48 | 43 |
| 3.20 | 218.20 | 25.52 | 270.00 | 245.50 | 0.017 | 5.5 | Shadow | 48 | 42 |
| 3.50 | 218.50 | 25.53 | 270.00 | 245.50 | 0.030 | 5.9 | Shadow | 48 | 42 |
| 3.80 | 218.80 | 25.55 | 270.00 | 245.50 | 0.047 | 6.4 | Shadow | 48 | 42 |

Barrier Calculations based on NRC/CHMC model.

NS = 217.25 (ELEVATION AT NOISE SOURCE)
 NR = 218 (ELEVATION AT RECEIVING POINT)
 BN = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLDd MMAT.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 270 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NO = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES *****

LOCATION: Lot 109/ND - ERNST

Starting Barrier Height above Ground = 2 M.
Ground Elevation at Base of Noise Barrier = 215 M.
Effective Noise Source Height above Ground = 2.25 M.As per NTC method
Ground Elevation at Source = 215 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 216.5 M.
Horizontal Distance from Noise Source to Barrier = 54.5 M.
Horizontal Distance from Barrier to Receiver = 270 M.
Frequency of the Noise = 500 Hz

| BH | | | | | | | | LEQ LEQ | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND | ND |
| 2.00 | 217.00 | 54.50 | 270.00 | 324.50 | 0.002 | 4.9 | Bright | 47 | 42 |
| 2.30 | 217.30 | 54.50 | 270.00 | 324.50 | 0.000 | 5.0 | Bright | 47 | 42 |
| 2.60 | 217.60 | 54.50 | 270.00 | 324.50 | 0.001 | 5.0 | Shadow | 47 | 42 |
| 2.90 | 217.90 | 54.50 | 270.00 | 324.50 | 0.003 | 5.1 | Shadow | 47 | 42 |
| 3.20 | 218.20 | 54.51 | 270.00 | 324.50 | 0.007 | 5.2 | Shadow | 47 | 42 |
| 3.50 | 218.50 | 54.51 | 270.00 | 324.50 | 0.014 | 5.4 | Shadow | 47 | 42 |

Barrier Calculations based on NRC/CNIC model.

MS = 217.25 (ELEVATION AT NOISE SOURCE)
MR = 218 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD IN Mm.
DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DSB = 270 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEQ ND = LEQ (DBA) AT RECEIVER NO BARRIER.
LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES *****

LOCATION: Lot 119/SD - QUINN

Starting Barrier Height above Ground = 2 M.
Ground Elevation at Base of Noise Barrier = 214.3 M.
Effective Noise Source Height above Ground = 2.25 M.As per NTC method
Ground Elevation at Source = 214.3 M.
Effective Noise Receiver Height above ground = 1.5 M.
Ground Elevation at base of receiving point = 210 M.
Horizontal Distance from Noise Source to Barrier = 54.5 M.
Horizontal Distance from Barrier to Receiver = 142 M.
Frequency of the Noise = 500 Hz

| BH | | | | | | | | LEQ LEQ | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | ND | A | B | C | PLD | ATT. | ZONE | ND | ND |
| 2.00 | 216.30 | 54.50 | 142.00 | 196.50 | 0.017 | 5.5 | Shadow | 51 | 45 |
| 2.30 | 216.60 | 54.50 | 142.09 | 196.50 | 0.027 | 5.8 | Shadow | 51 | 45 |
| 2.60 | 216.90 | 54.50 | 142.10 | 196.50 | 0.039 | 6.1 | Shadow | 51 | 45 |
| 2.90 | 217.20 | 54.50 | 142.11 | 196.50 | 0.053 | 6.5 | Shadow | 51 | 45 |
| 3.20 | 217.50 | 54.51 | 142.13 | 196.50 | 0.070 | 6.9 | Shadow | 51 | 44 |
| 3.50 | 217.80 | 54.51 | 142.14 | 196.50 | 0.089 | 7.3 | Shadow | 51 | 44 |
| 3.80 | 218.10 | 54.52 | 142.15 | 196.50 | 0.110 | 7.6 | Shadow | 51 | 43 |
| 4.10 | 218.40 | 54.53 | 142.17 | 196.50 | 0.134 | 8.0 | Shadow | 51 | 43 |
| 4.40 | 218.70 | 54.54 | 142.18 | 196.50 | 0.160 | 8.4 | Shadow | 51 | 43 |
| 4.70 | 219.00 | 54.56 | 142.20 | 196.50 | 0.188 | 8.8 | Shadow | 51 | 42 |
| 5.00 | 219.30 | 54.57 | 142.21 | 196.50 | 0.219 | 9.1 | Shadow | 51 | 42 |
| 5.30 | 219.60 | 54.59 | 142.23 | 196.50 | 0.251 | 9.5 | Shadow | 51 | 42 |

Barrier Calculations based on NRC/CNIC model.

MS = 216.55 (ELEVATION AT NOISE SOURCE)
MR = 211.5 (ELEVATION AT RECEIVING POINT)
BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
NB = ELEVATION AT TOP OF BARRIER.
A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
PLD = PATH LENGTH DIFFERENCE = A+B-C.
DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
ATT = BARRIER ATTENUATION REFERENCE PLD IN Mm.
DSB = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
DSB = 142 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
LEQ ND = LEQ (DBA) AT RECEIVER NO BARRIER.
LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 119/MB - QUINN

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 214.3 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC method.
 Ground Elevation at Source = 214.3 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 210 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 25.3 Meter(s)
 Horizontal Distance from Barrier to Receiver = 182 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | MB | A | B | C | PLD | ATT. | ZONE | LED LEQ MB MB |
|---------------------|--------|-------|--------|--------|-------|------|--------|------------------|
| 1.00 | 215.30 | 25.53 | 142.05 | 167.50 | 0.005 | 4.8 | Bright | 52 47 |
| 1.30 | 215.60 | 25.52 | 142.06 | 167.50 | 0.001 | 4.9 | Bright | 52 47 |
| 1.60 | 215.90 | 25.51 | 142.07 | 167.50 | 0.000 | 5.0 | Shadow | 52 47 |
| 1.90 | 216.20 | 25.50 | 142.08 | 167.50 | 0.004 | 5.1 | Shadow | 52 47 |
| 2.20 | 216.50 | 25.50 | 142.09 | 167.50 | 0.012 | 5.4 | Shadow | 52 47 |
| 2.50 | 216.80 | 25.50 | 142.10 | 167.50 | 0.024 | 5.7 | Shadow | 52 46 |
| 2.80 | 217.10 | 25.51 | 142.11 | 167.50 | 0.040 | 6.2 | Shadow | 52 46 |
| 3.10 | 217.40 | 25.51 | 142.12 | 167.50 | 0.061 | 6.7 | Shadow | 52 45 |
| 3.40 | 217.70 | 25.53 | 142.14 | 167.50 | 0.085 | 7.2 | Shadow | 52 45 |
| 3.70 | 218.00 | 25.54 | 142.15 | 167.50 | 0.114 | 7.7 | Shadow | 52 44 |
| 4.00 | 218.30 | 25.56 | 142.16 | 167.50 | 0.147 | 8.2 | Shadow | 52 44 |
| 4.30 | 218.60 | 25.58 | 142.18 | 167.50 | 0.184 | 8.7 | Shadow | 52 43 |
| 4.60 | 218.90 | 25.61 | 142.19 | 167.50 | 0.225 | 9.2 | Shadow | 52 43 |
| 4.90 | 219.20 | 25.64 | 142.21 | 167.50 | 0.270 | 9.7 | Shadow | 52 42 |
| 5.20 | 219.50 | 25.67 | 142.23 | 167.50 | 0.319 | 10.2 | Shadow | 52 42 |

Barrier Calculations based on MTC/CNMC model.

NS = 216.35 (ELEVATION AT NOISE SOURCE)
 MB = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 LEQ MB = LEQ (DBA) AT RECEIVER NO BARRIER.

MR = 211.5 (ELEVATION AT RECEIVING POINT)
 MB = ELEVATION AT TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 ATT = BARRIER ATTENUATION REFERENCE PLD & MMAL.
 DBR = 182 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 120/SD - PALERMO

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 214.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method
 Ground Elevation at Source = 214.3 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 214.3 M.
 Horizontal Distance from Noise Source to Barrier = 25.3 M.
 Horizontal Distance from Barrier to Receiver = 182 M.
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | MB | A | B | C | PLD | ATT. | ZONE | LED LEQ MB MB |
|---------------------|--------|-------|--------|--------|-------|------|--------|------------------|
| 2.00 | 216.30 | 25.50 | 182.00 | 207.50 | 0.001 | 4.9 | Bright | 50 45 |
| 2.30 | 216.60 | 25.50 | 182.00 | 207.50 | 0.000 | 5.0 | Shadow | 50 45 |
| 2.60 | 216.90 | 25.50 | 182.00 | 207.50 | 0.004 | 5.1 | Shadow | 50 45 |
| 2.90 | 217.20 | 25.51 | 182.01 | 207.50 | 0.012 | 5.4 | Shadow | 50 45 |
| 3.20 | 217.50 | 25.52 | 182.01 | 207.50 | 0.024 | 5.7 | Shadow | 50 44 |
| 3.50 | 217.80 | 25.53 | 182.01 | 207.50 | 0.040 | 6.2 | Shadow | 50 44 |
| 3.80 | 218.10 | 25.55 | 182.01 | 207.50 | 0.060 | 6.7 | Shadow | 50 43 |
| 4.10 | 218.40 | 25.57 | 182.02 | 207.50 | 0.084 | 7.2 | Shadow | 50 43 |
| 4.40 | 218.70 | 25.59 | 182.02 | 207.50 | 0.112 | 7.7 | Shadow | 50 42 |
| 4.70 | 219.00 | 25.62 | 182.03 | 207.50 | 0.144 | 8.2 | Shadow | 50 42 |

Barrier Calculations based on MTC/CNMC model.

NS = 216.35 (ELEVATION AT NOISE SOURCE)
 MR = 215.0 (ELEVATION AT RECEIVING POINT)
 MB = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 MB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD & MMAL.
 DSB = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 182 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ MB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ MB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 120/ND - PALERMO

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 214.3 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method
 Ground Elevation at Source = 214.3 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 214.3 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 182 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | LEQ LEQ | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| 2.00 | 216.30 | 54.50 | 182.00 | 236.50 | 0.000 | 5.0 | Bright | 49 | 44 |
| 2.30 | 216.60 | 54.50 | 182.00 | 236.50 | 0.001 | 5.0 | Shadow | 49 | 44 |
| 2.60 | 216.90 | 54.50 | 182.00 | 236.50 | 0.003 | 5.1 | Shadow | 49 | 44 |
| 2.90 | 217.20 | 54.50 | 182.01 | 236.50 | 0.008 | 5.2 | Shadow | 49 | 44 |
| 3.20 | 217.50 | 54.51 | 182.01 | 236.50 | 0.015 | 5.3 | Shadow | 49 | 44 |
| 3.50 | 217.80 | 54.51 | 182.01 | 236.50 | 0.024 | 5.7 | Shadow | 49 | 43 |
| 3.80 | 218.10 | 54.52 | 182.01 | 236.50 | 0.035 | 6.0 | Shadow | 49 | 43 |
| 4.10 | 218.40 | 54.53 | 182.02 | 236.50 | 0.049 | 6.4 | Shadow | 49 | 43 |
| 4.40 | 218.70 | 54.54 | 182.02 | 236.50 | 0.064 | 6.7 | Shadow | 49 | 42 |
| 4.70 | 219.00 | 54.56 | 182.03 | 236.50 | 0.082 | 7.1 | Shadow | 49 | 42 |
| 5.00 | 219.30 | 54.57 | 182.03 | 236.50 | 0.102 | 7.5 | Shadow | 49 | 42 |

Barrier Calculations based on MTC/CMHC model.

NS = 216.55 (ELEVATION AT NOISE SOURCE)
 NR = 215.0 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD. MMAL.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 182 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 133/SD - OKIAI

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 212.0 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method.
 Ground Elevation at Source = 212.0 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 216.5 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 220 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | LEQ LEQ | |
|---------------|--------|-------|--------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| 2.00 | 214.00 | 54.50 | 220.02 | 274.52 | 0.008 | 4.7 | Bright | 49 | 44 |
| 2.30 | 215.10 | 54.50 | 220.02 | 274.52 | 0.003 | 4.8 | Bright | 49 | 44 |
| 2.60 | 215.40 | 54.50 | 220.02 | 274.52 | 0.001 | 4.9 | Bright | 49 | 44 |
| 2.90 | 215.70 | 54.50 | 220.01 | 274.52 | 0.000 | 5.0 | Shadow | 49 | 44 |
| 3.20 | 216.00 | 54.51 | 220.01 | 274.52 | 0.002 | 5.0 | Shadow | 49 | 44 |
| 3.50 | 216.30 | 54.51 | 220.01 | 274.52 | 0.005 | 5.1 | Shadow | 49 | 44 |
| 3.80 | 216.60 | 54.52 | 220.00 | 274.52 | 0.011 | 5.3 | Shadow | 49 | 44 |
| 4.10 | 216.90 | 54.53 | 220.00 | 274.52 | 0.018 | 5.6 | Shadow | 49 | 43 |
| 4.40 | 217.20 | 54.54 | 220.00 | 274.52 | 0.028 | 5.8 | Shadow | 49 | 43 |
| 4.70 | 217.50 | 54.56 | 220.00 | 274.52 | 0.040 | 6.2 | Shadow | 49 | 43 |
| 5.00 | 217.80 | 54.57 | 220.00 | 274.52 | 0.054 | 6.5 | Shadow | 49 | 42 |
| 5.30 | 218.10 | 54.59 | 220.00 | 274.52 | 0.069 | 6.9 | Shadow | 49 | 42 |
| 5.60 | 218.40 | 54.60 | 220.00 | 274.52 | 0.087 | 7.2 | Shadow | 49 | 42 |
| 5.90 | 218.70 | 54.62 | 220.00 | 274.52 | 0.107 | 7.6 | Shadow | 49 | 41 |
| 6.20 | 219.00 | 54.64 | 220.00 | 274.52 | 0.129 | 8.0 | Shadow | 49 | 41 |
| 6.50 | 219.30 | 54.67 | 220.00 | 274.52 | 0.153 | 8.3 | Shadow | 49 | 41 |

Barrier Calculations based on MTC/CMHC model.

NS = 215.05 (ELEVATION AT NOISE SOURCE)
 NR = 218 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD. MMAL.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BDR = 220 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 133/MB - OKIMI

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 212.0 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method.
 Ground Elevation at Source = 212.0 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 214.5 M.
 Horizontal Distance from Noise Source to Barrier = 25.5 M.
 Horizontal Distance from Barrier to Receiver = 220 M.
 Frequency of the Noise = 500 Hz

| DB | ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|------|---------------|-------|--------|--------|-------|-----|--------|------|----|----|
| 2.00 | 214.80 | 25.50 | 220.02 | 245.52 | 0.007 | 4.7 | Bright | 49 | 44 | |
| 2.30 | 215.10 | 25.50 | 220.02 | 245.52 | 0.001 | 4.9 | Bright | 49 | 44 | |
| 2.60 | 215.40 | 25.50 | 220.02 | 245.52 | 0.000 | 5.0 | Shadow | 49 | 44 | |
| 2.90 | 215.70 | 25.51 | 220.01 | 245.52 | 0.003 | 5.1 | Shadow | 49 | 44 | |
| 3.20 | 216.00 | 25.52 | 220.01 | 245.52 | 0.009 | 5.3 | Shadow | 49 | 44 | |
| 3.50 | 216.30 | 25.53 | 220.01 | 245.52 | 0.019 | 5.6 | Shadow | 49 | 43 | |
| 3.80 | 216.60 | 25.55 | 220.00 | 245.52 | 0.034 | 6.0 | Shadow | 49 | 43 | |
| 4.10 | 216.90 | 25.57 | 220.00 | 245.52 | 0.052 | 6.5 | Shadow | 49 | 43 | |
| 4.40 | 217.20 | 25.59 | 220.00 | 245.52 | 0.074 | 7.0 | Shadow | 49 | 42 | |
| 4.70 | 217.50 | 25.62 | 220.00 | 245.52 | 0.100 | 7.5 | Shadow | 49 | 42 | |
| 5.00 | 217.80 | 25.65 | 220.00 | 245.52 | 0.130 | 8.0 | Shadow | 49 | 41 | |
| 5.30 | 218.10 | 25.68 | 220.00 | 245.52 | 0.164 | 8.5 | Shadow | 49 | 41 | |

Barrier Calculations based on NRC/CNRC model.

HS = 215.05 (ELEVATION AT NOISE SOURCE)
 HR = 210 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD₀ MMIL.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 220 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ HB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NO = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: LOT 133/AL - OKIMI

Starting Barrier Height above Ground = 1.4 M.
 Ground Elevation at Base of Noise Barrier = 214.7 M.
 Effective Noise Source Height above Ground = 1.5 M.As per MTC method.
 Ground Elevation at Source = 214.7 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 216.3 M.
 Horizontal Distance from Noise Source to Barrier = 12 M.
 Horizontal Distance from Barrier to Receiver = 60 M.
 Frequency of the Noise = 500 Hz

| DB | ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NO | NO |
|------|---------------|-------|-------|-------|-------|------|--------|------|----|----|
| 1.40 | 216.10 | 12.00 | 60.03 | 00.02 | 0.007 | 4.7 | Bright | 54 | 49 | |
| 1.70 | 216.40 | 12.00 | 60.02 | 00.02 | 0.000 | 5.0 | Bright | 54 | 49 | |
| 2.00 | 216.70 | 12.01 | 60.01 | 00.02 | 0.003 | 5.1 | Shadow | 54 | 49 | |
| 2.30 | 217.00 | 12.03 | 60.01 | 00.02 | 0.014 | 5.4 | Shadow | 54 | 49 | |
| 2.60 | 217.30 | 12.05 | 60.00 | 00.02 | 0.034 | 6.0 | Shadow | 54 | 48 | |
| 2.90 | 217.60 | 12.08 | 60.00 | 00.02 | 0.062 | 6.7 | Shadow | 54 | 47 | |
| 3.20 | 217.90 | 12.12 | 60.00 | 00.02 | 0.100 | 7.4 | Shadow | 54 | 47 | |
| 3.50 | 218.20 | 12.17 | 60.00 | 00.02 | 0.146 | 8.2 | Shadow | 54 | 46 | |
| 3.80 | 218.50 | 12.22 | 60.00 | 00.02 | 0.200 | 8.9 | Shadow | 54 | 45 | |
| 4.10 | 218.80 | 12.28 | 60.00 | 00.02 | 0.263 | 9.6 | Shadow | 54 | 44 | |
| 4.40 | 219.10 | 12.35 | 60.01 | 00.02 | 0.334 | 10.3 | Shadow | 54 | 44 | |

Barrier Calculations based on NRC/CNRC model.

HS = 216.2 (ELEVATION AT NOISE SOURCE)
 HR = 210 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD₀ MMIL.
 BSD = 12 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 60 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ HB = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NO = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 149/SB - BENEDICT

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 214.2 M.
 Effective Noise Source Height above Ground = 2.25 M.As per HTC method.
 Ground Elevation at Source = 214.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 218 M.
 Horizontal Distance from Noise Source to Barrier = 25.3 M.
 Horizontal Distance from Barrier to Receiver = 45 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | LED LED | |
|---------------|--------|-------|-------|-------|-------|------|--------|---------|----|
| ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NB | WB |
| 2.00 | 216.20 | 25.50 | 65.00 | 90.53 | 0.034 | 3.4 | Bright | SS | 52 |
| 2.30 | 216.50 | 25.50 | 65.07 | 90.53 | 0.018 | 4.2 | Bright | SS | 51 |
| 2.60 | 216.00 | 25.50 | 65.06 | 90.53 | 0.007 | 4.7 | Bright | SS | 50 |
| 2.90 | 217.10 | 25.51 | 65.04 | 90.53 | 0.001 | 4.9 | Bright | SS | 50 |
| 3.20 | 217.40 | 25.52 | 65.03 | 90.53 | 0.000 | 5.0 | Shadow | SS | 50 |
| 3.50 | 217.70 | 25.53 | 65.02 | 90.53 | 0.004 | 5.1 | Shadow | SS | 50 |
| 3.80 | 218.00 | 25.55 | 65.02 | 90.53 | 0.013 | 5.4 | Shadow | SS | 50 |
| 4.10 | 218.30 | 25.57 | 65.01 | 90.53 | 0.027 | 5.8 | Shadow | SS | 49 |
| 4.40 | 218.60 | 25.59 | 65.01 | 90.53 | 0.045 | 6.3 | Shadow | SS | 49 |

Barrier Calculations based on NRC/CNRC model.

MS = 216.45 (ELEVATION AT NOISE SOURCE)
 NR = 219.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN M.
 BSD = 25.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BMR = 45 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 149/NB - BENEDICT.

Starting Barrier Height above Ground = 2 M.
 Ground Elevation at Base of Noise Barrier = 214.2 M.
 Effective Noise Source Height above Ground = 2.25 M.As per HTC method.
 Ground Elevation at Source = 214.2 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 218 M.
 Horizontal Distance from Noise Source to Barrier = 54.5 M.
 Horizontal Distance from Barrier to Receiver = 45 M.
 Frequency of the Noise = 500 Hz

| BH | | | | | | | | LED LED | |
|---------------|--------|-------|-------|--------|-------|------|--------|---------|----|
| ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | NB | WB |
| 2.00 | 216.20 | 54.50 | 65.00 | 119.54 | 0.045 | 2.6 | Bright | 54 | 51 |
| 2.30 | 216.50 | 54.50 | 65.07 | 119.54 | 0.030 | 3.6 | Bright | 54 | 50 |
| 2.60 | 216.00 | 54.50 | 65.06 | 119.54 | 0.018 | 4.2 | Bright | 54 | 50 |
| 2.90 | 217.10 | 54.50 | 65.04 | 119.54 | 0.009 | 4.6 | Bright | 54 | 49 |
| 3.20 | 217.40 | 54.51 | 65.03 | 119.54 | 0.003 | 4.8 | Bright | 54 | 49 |
| 3.50 | 217.70 | 54.51 | 65.02 | 119.54 | 0.000 | 4.9 | Bright | 54 | 49 |
| 3.80 | 218.00 | 54.52 | 65.02 | 119.54 | 0.000 | 5.0 | Shadow | 54 | 49 |
| 4.10 | 218.30 | 54.53 | 65.01 | 119.54 | 0.004 | 5.1 | Shadow | 54 | 49 |
| 4.40 | 218.60 | 54.54 | 65.01 | 119.54 | 0.010 | 5.3 | Shadow | 54 | 49 |
| 4.70 | 218.90 | 54.56 | 65.00 | 119.54 | 0.019 | 5.6 | Shadow | 54 | 48 |
| 5.00 | 219.20 | 54.57 | 65.00 | 119.54 | 0.031 | 5.9 | Shadow | 54 | 48 |
| 5.30 | 219.50 | 54.59 | 65.00 | 119.54 | 0.046 | 6.3 | Shadow | 54 | 48 |

Barrier Calculations based on NRC/CNRC model.

MS = 216.45 (ELEVATION AT NOISE SOURCE)
 NR = 219.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 HB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSD = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD IN M.
 BSD = 54.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 BMR = 45 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED WB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 208/SB - MORRIS.

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 226.6 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per NTC.
 Ground Elevation at Source = 226.6 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 226 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 244 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | LEG | LEG |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----|-----|
| | | | | | | | | NO | NO |
| 1.00 | 227.60 | 53.01 | 244.00 | 297.00 | 0.012 | 4.5 | Bright | 48 | 43 |
| 1.30 | 227.90 | 53.01 | 244.00 | 297.00 | 0.006 | 4.7 | Bright | 48 | 43 |
| 1.60 | 228.20 | 53.00 | 244.00 | 297.00 | 0.002 | 4.9 | Bright | 48 | 43 |
| 1.90 | 228.50 | 53.00 | 244.00 | 297.00 | 0.000 | 5.0 | Bright | 48 | 43 |
| 2.20 | 228.80 | 53.00 | 244.00 | 297.00 | 0.000 | 5.0 | Shadow | 48 | 43 |
| 2.50 | 229.10 | 53.00 | 244.01 | 297.00 | 0.003 | 5.1 | Shadow | 48 | 43 |
| 2.80 | 229.40 | 53.00 | 244.01 | 297.00 | 0.007 | 5.2 | Shadow | 48 | 43 |
| 3.10 | 229.70 | 53.01 | 244.01 | 297.00 | 0.014 | 5.4 | Shadow | 48 | 43 |
| 3.40 | 230.00 | 53.01 | 244.01 | 297.00 | 0.022 | 5.7 | Shadow | 48 | 42 |
| 3.70 | 230.30 | 53.02 | 244.02 | 297.00 | 0.033 | 6.0 | Shadow | 48 | 42 |
| 4.00 | 230.60 | 53.03 | 244.02 | 297.00 | 0.046 | 6.3 | Shadow | 48 | 42 |
| 4.30 | 230.90 | 53.04 | 244.02 | 297.00 | 0.060 | 6.7 | Shadow | 48 | 41 |
| 4.60 | 231.20 | 53.05 | 244.03 | 297.00 | 0.077 | 7.0 | Shadow | 48 | 41 |
| 4.90 | 231.50 | 53.07 | 244.03 | 297.00 | 0.096 | 7.4 | Shadow | 48 | 41 |
| 5.20 | 231.80 | 53.08 | 244.04 | 297.00 | 0.117 | 7.7 | Shadow | 48 | 40 |
| 5.50 | 232.10 | 53.10 | 244.04 | 297.00 | 0.140 | 8.1 | Shadow | 48 | 40 |
| 5.80 | 232.40 | 53.12 | 244.05 | 297.00 | 0.165 | 8.5 | Shadow | 48 | 40 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 208/NO - MORRIS

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 226.6 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per NTC.
 Ground Elevation at Source = 226.6 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 226 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 244 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | LEG | LEG |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----|-----|
| | | | | | | | | NO | NO |
| 1.00 | 227.60 | 27.03 | 244.00 | 271.00 | 0.026 | 3.9 | Bright | 48 | 44 |
| 1.30 | 227.90 | 27.02 | 244.00 | 271.00 | 0.014 | 4.4 | Bright | 48 | 44 |
| 1.60 | 228.20 | 27.01 | 244.00 | 271.00 | 0.005 | 4.8 | Bright | 48 | 43 |
| 1.90 | 228.50 | 27.00 | 244.00 | 271.00 | 0.001 | 4.9 | Bright | 48 | 43 |
| 2.20 | 228.80 | 27.00 | 244.00 | 271.00 | 0.000 | 5.0 | Shadow | 48 | 43 |
| 2.50 | 229.10 | 27.00 | 244.01 | 271.00 | 0.003 | 5.1 | Shadow | 48 | 43 |
| 2.80 | 229.40 | 27.01 | 244.01 | 271.00 | 0.010 | 5.3 | Shadow | 48 | 43 |
| 3.10 | 229.70 | 27.01 | 244.01 | 271.00 | 0.020 | 5.6 | Shadow | 48 | 42 |
| 3.40 | 230.00 | 27.02 | 244.01 | 271.00 | 0.034 | 6.0 | Shadow | 48 | 42 |
| 3.70 | 230.30 | 27.04 | 244.02 | 271.00 | 0.052 | 6.3 | Shadow | 48 | 42 |
| 4.00 | 230.60 | 27.06 | 244.02 | 271.00 | 0.073 | 6.9 | Shadow | 48 | 41 |
| 4.30 | 230.90 | 27.08 | 244.02 | 271.00 | 0.098 | 7.4 | Shadow | 48 | 41 |
| 4.60 | 231.20 | 27.10 | 244.03 | 271.00 | 0.127 | 7.9 | Shadow | 48 | 40 |
| 4.90 | 231.50 | 27.13 | 244.03 | 271.00 | 0.159 | 8.4 | Shadow | 48 | 40 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 209/SB - WHITEHEAD

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 223.2 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 223.2 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 225 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 75 Meter(s)
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LEG | LEG |
|-------|--------|-------|-------|--------|-------|------|--------|-----|-----|
| ABOVE | | | | | | | | NB | NB |
| P.L. | | | | | | | | | |
| 1.00 | 226.20 | 53.01 | 75.00 | 120.00 | 0.012 | 4.5 | Bright | 53 | 48 |
| 1.30 | 226.50 | 53.01 | 75.00 | 120.00 | 0.005 | 4.8 | Bright | 53 | 48 |
| 1.60 | 226.80 | 53.00 | 75.00 | 120.00 | 0.001 | 4.9 | Bright | 53 | 48 |
| 1.90 | 227.10 | 53.00 | 75.00 | 120.00 | 0.000 | 5.0 | Shadow | 53 | 48 |
| 2.20 | 227.40 | 53.00 | 75.01 | 120.00 | 0.002 | 5.0 | Shadow | 53 | 48 |
| 2.50 | 227.70 | 53.00 | 75.01 | 120.00 | 0.007 | 5.2 | Shadow | 53 | 48 |
| 2.80 | 228.00 | 53.00 | 75.02 | 120.00 | 0.014 | 5.4 | Shadow | 53 | 48 |
| 3.10 | 228.30 | 53.01 | 75.02 | 120.00 | 0.025 | 5.8 | Shadow | 53 | 47 |
| 3.40 | 228.60 | 53.01 | 75.03 | 120.00 | 0.030 | 6.1 | Shadow | 53 | 47 |
| 3.70 | 228.90 | 53.02 | 75.04 | 120.00 | 0.035 | 6.5 | Shadow | 53 | 46 |
| 4.00 | 229.20 | 53.03 | 75.05 | 120.00 | 0.074 | 7.0 | Shadow | 53 | 46 |
| 4.30 | 229.50 | 53.04 | 75.06 | 120.00 | 0.096 | 7.4 | Shadow | 53 | 46 |
| 4.60 | 229.80 | 53.05 | 75.07 | 120.00 | 0.121 | 7.8 | Shadow | 53 | 45 |
| 4.90 | 230.10 | 53.07 | 75.09 | 120.00 | 0.149 | 8.3 | Shadow | 53 | 45 |
| 5.20 | 230.40 | 53.08 | 75.10 | 120.00 | 0.180 | 8.7 | Shadow | 53 | 44 |
| 5.50 | 230.70 | 53.10 | 75.12 | 120.00 | 0.214 | 9.1 | Shadow | 53 | 44 |
| 5.80 | 231.00 | 53.12 | 75.13 | 120.00 | 0.250 | 9.5 | Shadow | 53 | 44 |
| 6.10 | 231.30 | 53.14 | 75.15 | 120.00 | 0.290 | 9.8 | Shadow | 53 | 43 |
| 6.40 | 231.60 | 53.16 | 75.17 | 120.00 | 0.332 | 10.3 | Shadow | 53 | 43 |
| 6.70 | 231.90 | 53.19 | 75.19 | 120.00 | 0.377 | 10.7 | Shadow | 53 | 42 |
| 7.00 | 232.20 | 53.21 | 75.22 | 120.00 | 0.425 | 11.1 | Shadow | 53 | 42 |

Barrier Calculations based on MRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 209/NB - WHITEHEAD.

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 223.2 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 223.2 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 225 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 75 Meter(s)
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LEG | LEG |
|-------|--------|-------|-------|--------|-------|------|--------|-----|-----|
| ABOVE | | | | | | | | NB | NB |
| P.L. | | | | | | | | | |
| 1.00 | 226.20 | 27.03 | 75.00 | 102.00 | 0.025 | 3.9 | Bright | 55 | 51 |
| 1.30 | 226.50 | 27.02 | 75.00 | 102.00 | 0.012 | 4.5 | Bright | 55 | 51 |
| 1.60 | 226.80 | 27.01 | 75.00 | 102.00 | 0.004 | 4.8 | Bright | 55 | 50 |
| 1.90 | 227.10 | 27.00 | 75.00 | 102.00 | 0.000 | 5.0 | Bright | 55 | 50 |
| 2.20 | 227.40 | 27.00 | 75.01 | 102.00 | 0.001 | 5.0 | Shadow | 55 | 50 |
| 2.50 | 227.70 | 27.00 | 75.01 | 102.00 | 0.006 | 5.2 | Shadow | 55 | 50 |
| 2.80 | 228.00 | 27.01 | 75.02 | 102.00 | 0.016 | 5.5 | Shadow | 55 | 49 |
| 3.10 | 228.30 | 27.01 | 75.02 | 102.00 | 0.031 | 5.9 | Shadow | 55 | 49 |
| 3.40 | 228.60 | 27.02 | 75.03 | 102.00 | 0.049 | 6.4 | Shadow | 55 | 49 |
| 3.70 | 228.90 | 27.04 | 75.04 | 102.00 | 0.073 | 6.9 | Shadow | 55 | 48 |
| 4.00 | 229.20 | 27.06 | 75.05 | 102.00 | 0.101 | 7.5 | Shadow | 55 | 48 |
| 4.30 | 229.50 | 27.08 | 75.06 | 102.00 | 0.133 | 8.0 | Shadow | 55 | 47 |
| 4.60 | 229.80 | 27.10 | 75.07 | 102.00 | 0.170 | 8.5 | Shadow | 55 | 46 |
| 4.90 | 230.10 | 27.13 | 75.09 | 102.00 | 0.212 | 9.1 | Shadow | 55 | 46 |
| 5.20 | 230.40 | 27.16 | 75.10 | 102.00 | 0.258 | 9.5 | Shadow | 55 | 45 |
| 5.50 | 230.70 | 27.19 | 75.12 | 102.00 | 0.308 | 10.1 | Shadow | 55 | 45 |
| 5.80 | 231.00 | 27.23 | 75.13 | 102.00 | 0.363 | 10.6 | Shadow | 55 | 44 |
| 6.10 | 231.30 | 27.27 | 75.15 | 102.00 | 0.422 | 11.1 | Shadow | 55 | 44 |
| 6.40 | 231.60 | 27.32 | 75.17 | 102.00 | 0.486 | 11.6 | Shadow | 55 | 43 |
| 6.70 | 231.90 | 27.36 | 75.19 | 102.00 | 0.554 | 12.0 | Shadow | 55 | 43 |
| 7.00 | 232.20 | 27.41 | 75.22 | 102.00 | 0.627 | 12.4 | Shadow | 55 | 43 |
| 7.30 | 232.50 | 27.47 | 75.24 | 102.00 | 0.703 | 12.8 | Shadow | 55 | 42 |
| 7.60 | 232.80 | 27.52 | 75.26 | 102.00 | 0.785 | 13.2 | Shadow | 55 | 42 |

Barrier Calculations based on MRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 210/SB - NICOLAN

| | | |
|--|---------|----------------------|
| Starting Barrier Height above Ground | = 1 | Meter(s) |
| Ground Elevation at Base of Noise Barrier | = 225.6 | Meter(s) |
| Effective Noise Source Height above Ground | = 2.25 | Meter(s) As per MTC. |
| Ground Elevation at Source | = 225.6 | Meter(s) |
| Effective Noise Receiver Height above ground | = 1.5 | Meter(s) |
| Ground Elevation at base of receiving point | = 224.1 | Meter(s) |
| Horizontal Distance from Noise Source to Barrier | = 27 | Meter(s) |
| Horizontal Distance from Barrier to Receiver | = 96 | Meter(s) |
| Frequency of the Noise | = 500 | Hz |

| BN ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ WB |
|---------------------|--------|-------|-------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 226.60 | 27.03 | 96.01 | 123.02 | 0.014 | 4.4 | Bright | 53 | 49 |
| 1.30 | 226.90 | 27.02 | 96.01 | 123.02 | 0.005 | 4.8 | Bright | 53 | 48 |
| 1.60 | 227.20 | 27.01 | 96.01 | 123.02 | 0.001 | 4.9 | Bright | 53 | 48 |
| 1.90 | 227.50 | 27.00 | 96.02 | 123.02 | 0.000 | 5.0 | Shadow | 53 | 48 |
| 2.20 | 227.80 | 27.00 | 96.03 | 123.02 | 0.005 | 5.1 | Shadow | 53 | 48 |
| 2.50 | 228.10 | 27.00 | 96.03 | 123.02 | 0.013 | 5.4 | Shadow | 53 | 48 |
| 2.80 | 228.40 | 27.01 | 96.04 | 123.02 | 0.026 | 5.8 | Shadow | 53 | 47 |
| 3.10 | 228.70 | 27.01 | 96.05 | 123.02 | 0.043 | 6.2 | Shadow | 53 | 47 |
| 3.40 | 229.00 | 27.02 | 96.06 | 123.02 | 0.064 | 6.7 | Shadow | 53 | 46 |
| 3.70 | 229.30 | 27.04 | 96.07 | 123.02 | 0.090 | 7.3 | Shadow | 53 | 45 |
| 4.00 | 229.60 | 27.06 | 96.08 | 123.02 | 0.119 | 7.8 | Shadow | 53 | 45 |
| 4.30 | 229.90 | 27.08 | 96.10 | 123.02 | 0.153 | 8.3 | Shadow | 53 | 45 |
| 4.60 | 230.20 | 27.10 | 96.11 | 123.02 | 0.192 | 8.8 | Shadow | 53 | 44 |
| 4.90 | 230.50 | 27.13 | 96.12 | 123.02 | 0.234 | 9.3 | Shadow | 53 | 44 |
| 5.20 | 230.80 | 27.16 | 96.14 | 123.02 | 0.281 | 9.8 | Shadow | 53 | 43 |
| 5.50 | 231.10 | 27.19 | 96.16 | 123.02 | 0.332 | 10.3 | Shadow | 53 | 42 |
| 5.80 | 231.40 | 27.23 | 96.18 | 123.02 | 0.387 | 10.8 | Shadow | 53 | 42 |
| 6.10 | 231.70 | 27.27 | 96.19 | 123.02 | 0.446 | 11.3 | Shadow | 53 | 42 |

Barrier Calculations based on NRC/CNMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 210/NB - NICOLAN

| | | |
|--|---------|----------------------|
| Starting Barrier Height above Ground | = 1 | Meter(s) |
| Ground Elevation at Base of Noise Barrier | = 225.6 | Meter(s) |
| Effective Noise Source Height above Ground | = 2.25 | Meter(s) As per MTC. |
| Ground Elevation at Source | = 225.6 | Meter(s) |
| Effective Noise Receiver Height above ground | = 1.5 | Meter(s) |
| Ground Elevation at base of receiving point | = 224.1 | Meter(s) |
| Horizontal Distance from Noise Source to Barrier | = 53 | Meter(s) |
| Horizontal Distance from Barrier to Receiver | = 96 | Meter(s) |
| Frequency of the Noise | = 500 | Hz |

| BN ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ WB |
|---------------------|--------|-------|-------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 226.60 | 53.01 | 96.01 | 149.02 | 0.003 | 4.9 | Bright | 52 | 47 |
| 1.30 | 226.90 | 53.01 | 96.01 | 149.02 | 0.000 | 4.9 | Bright | 52 | 47 |
| 1.60 | 227.20 | 53.00 | 96.01 | 149.02 | 0.000 | 5.0 | Shadow | 52 | 47 |
| 1.90 | 227.50 | 53.00 | 96.02 | 149.02 | 0.003 | 5.1 | Shadow | 52 | 47 |
| 2.20 | 227.80 | 53.00 | 96.03 | 149.02 | 0.008 | 5.2 | Shadow | 52 | 47 |
| 2.50 | 228.10 | 53.00 | 96.03 | 149.02 | 0.016 | 5.5 | Shadow | 52 | 46 |
| 2.80 | 228.40 | 53.00 | 96.04 | 149.02 | 0.027 | 5.8 | Shadow | 52 | 46 |
| 3.10 | 228.70 | 53.01 | 96.05 | 149.02 | 0.040 | 6.2 | Shadow | 52 | 46 |
| 3.40 | 229.00 | 53.01 | 96.06 | 149.02 | 0.056 | 6.6 | Shadow | 52 | 45 |
| 3.70 | 229.30 | 53.02 | 96.07 | 149.02 | 0.074 | 7.0 | Shadow | 52 | 45 |
| 4.00 | 229.60 | 53.03 | 96.08 | 149.02 | 0.095 | 7.4 | Shadow | 52 | 45 |
| 4.30 | 229.90 | 53.04 | 96.10 | 149.02 | 0.119 | 7.8 | Shadow | 52 | 44 |
| 4.60 | 230.20 | 53.05 | 96.11 | 149.02 | 0.145 | 8.2 | Shadow | 52 | 44 |
| 4.90 | 230.50 | 53.07 | 96.12 | 149.02 | 0.174 | 8.6 | Shadow | 52 | 43 |
| 5.20 | 230.80 | 53.08 | 96.14 | 149.02 | 0.206 | 9.0 | Shadow | 52 | 43 |
| 5.50 | 231.10 | 53.10 | 96.16 | 149.02 | 0.240 | 9.4 | Shadow | 52 | 42 |
| 5.80 | 231.40 | 53.12 | 96.18 | 149.02 | 0.277 | 9.7 | Shadow | 52 | 42 |
| 6.10 | 231.70 | 53.14 | 96.19 | 149.02 | 0.316 | 10.2 | Shadow | 52 | 42 |

Barrier Calculations based on NRC/CNMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 211/SB - DONOVAN

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 226.6 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 226.6 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 222.1 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 35 Meter(s)
 Frequency of the Noise = 500 Hz

| RM ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ NB |
|---------------------|--------|-------|-------|-------|-------|------|--------|-----------|-----------|
| 1.00 | 227.60 | 27.03 | 33.15 | 82.17 | 0.006 | 5.2 | Shadow | 56 | 51 |
| 1.30 | 227.90 | 27.02 | 33.17 | 82.17 | 0.017 | 5.5 | Shadow | 56 | 50 |
| 1.60 | 228.20 | 27.01 | 33.19 | 82.17 | 0.032 | 6.0 | Shadow | 56 | 50 |
| 1.90 | 228.50 | 27.00 | 33.22 | 82.17 | 0.052 | 6.5 | Shadow | 56 | 50 |
| 2.20 | 228.80 | 27.00 | 33.25 | 82.17 | 0.077 | 7.0 | Shadow | 56 | 49 |
| 2.50 | 229.10 | 27.00 | 33.27 | 82.17 | 0.106 | 7.6 | Shadow | 56 | 48 |
| 2.80 | 229.40 | 27.01 | 33.30 | 82.17 | 0.143 | 8.2 | Shadow | 56 | 48 |
| 3.10 | 229.70 | 27.01 | 33.34 | 82.17 | 0.183 | 8.7 | Shadow | 56 | 47 |
| 3.40 | 230.00 | 27.02 | 33.37 | 82.17 | 0.228 | 9.2 | Shadow | 56 | 47 |
| 3.70 | 230.30 | 27.04 | 33.41 | 82.17 | 0.278 | 9.7 | Shadow | 56 | 46 |
| 4.00 | 230.60 | 27.06 | 33.44 | 82.17 | 0.332 | 10.3 | Shadow | 56 | 46 |
| 4.30 | 230.90 | 27.08 | 33.48 | 82.17 | 0.392 | 10.9 | Shadow | 56 | 45 |
| 4.60 | 231.20 | 27.10 | 33.52 | 82.17 | 0.457 | 11.4 | Shadow | 56 | 45 |
| 4.90 | 231.50 | 27.13 | 33.56 | 82.17 | 0.526 | 11.9 | Shadow | 56 | 44 |
| 5.20 | 231.80 | 27.16 | 33.61 | 82.17 | 0.601 | 12.3 | Shadow | 56 | 44 |
| 5.50 | 232.10 | 27.19 | 33.65 | 82.17 | 0.680 | 12.7 | Shadow | 56 | 43 |
| 5.80 | 232.40 | 27.23 | 33.70 | 82.17 | 0.764 | 13.1 | Shadow | 56 | 43 |
| 6.10 | 232.70 | 27.27 | 33.75 | 82.17 | 0.853 | 13.5 | Shadow | 56 | 43 |
| 6.40 | 233.00 | 27.32 | 33.80 | 82.17 | 0.947 | 13.8 | Shadow | 56 | 42 |
| 6.70 | 233.30 | 27.36 | 33.85 | 82.17 | 1.045 | 14.1 | Shadow | 56 | 42 |
| 7.00 | 233.60 | 27.41 | 33.90 | 82.17 | 1.148 | 14.5 | Shadow | 56 | 42 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 211/NB - DONOVAN.

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 226.6 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 226.6 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 222.1 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 35 Meter(s)
 Frequency of the Noise = 500 Hz

| RM ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ NB |
|---------------------|--------|-------|-------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 227.60 | 53.01 | 53.15 | 108.13 | 0.032 | 6.0 | Shadow | 54 | 48 |
| 1.30 | 227.90 | 53.01 | 53.17 | 108.13 | 0.049 | 6.4 | Shadow | 54 | 48 |
| 1.60 | 228.20 | 53.00 | 53.19 | 108.13 | 0.068 | 6.8 | Shadow | 54 | 47 |
| 1.90 | 228.50 | 53.00 | 53.22 | 108.13 | 0.091 | 7.3 | Shadow | 54 | 47 |
| 2.20 | 228.80 | 53.00 | 53.25 | 108.13 | 0.118 | 7.8 | Shadow | 54 | 46 |
| 2.50 | 229.10 | 53.00 | 53.27 | 108.13 | 0.147 | 8.2 | Shadow | 54 | 46 |
| 2.80 | 229.40 | 53.00 | 53.30 | 108.13 | 0.180 | 8.7 | Shadow | 54 | 45 |
| 3.10 | 229.70 | 53.01 | 53.34 | 108.13 | 0.217 | 9.1 | Shadow | 54 | 45 |
| 3.40 | 230.00 | 53.01 | 53.37 | 108.13 | 0.256 | 9.5 | Shadow | 54 | 44 |
| 3.70 | 230.30 | 53.02 | 53.41 | 108.13 | 0.299 | 9.9 | Shadow | 54 | 44 |
| 4.00 | 230.60 | 53.03 | 53.44 | 108.13 | 0.345 | 10.4 | Shadow | 54 | 44 |
| 4.30 | 230.90 | 53.04 | 53.48 | 108.13 | 0.394 | 10.9 | Shadow | 54 | 43 |
| 4.60 | 231.20 | 53.05 | 53.52 | 108.13 | 0.447 | 11.3 | Shadow | 54 | 43 |
| 4.90 | 231.50 | 53.07 | 53.56 | 108.13 | 0.503 | 11.7 | Shadow | 54 | 42 |
| 5.20 | 231.80 | 53.08 | 53.61 | 108.13 | 0.562 | 12.1 | Shadow | 54 | 42 |
| 5.50 | 232.10 | 53.10 | 53.65 | 108.13 | 0.625 | 12.4 | Shadow | 54 | 42 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 231/58 - PARKIN

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 233 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 233 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 237 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 270 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | LEQ HD | LEQ WB |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 234.00 | 53.01 | 270.04 | 323.02 | 0.036 | 3.3 | Bright | 47 | 44 |
| 1.30 | 234.30 | 53.01 | 270.03 | 323.02 | 0.025 | 3.9 | Bright | 47 | 43 |
| 1.60 | 234.60 | 53.00 | 270.03 | 323.02 | 0.016 | 4.3 | Bright | 47 | 43 |
| 1.90 | 234.90 | 53.00 | 270.02 | 323.02 | 0.009 | 4.6 | Bright | 47 | 42 |
| 2.20 | 235.20 | 53.00 | 270.02 | 323.02 | 0.004 | 4.8 | Bright | 47 | 42 |
| 2.50 | 235.50 | 53.00 | 270.02 | 323.02 | 0.001 | 4.9 | Bright | 47 | 42 |
| 2.80 | 235.80 | 53.00 | 270.01 | 323.02 | 0.000 | 5.0 | Shadow | 47 | 42 |
| 3.10 | 236.10 | 53.01 | 270.01 | 323.02 | 0.001 | 5.0 | Shadow | 47 | 42 |
| 3.40 | 236.40 | 53.01 | 270.01 | 323.02 | 0.004 | 5.1 | Shadow | 47 | 42 |
| 3.70 | 236.70 | 53.02 | 270.01 | 323.02 | 0.009 | 5.3 | Shadow | 47 | 42 |
| 4.00 | 237.00 | 53.03 | 270.00 | 323.02 | 0.017 | 5.5 | Shadow | 47 | 41 |
| 4.30 | 237.30 | 53.04 | 270.00 | 323.02 | 0.026 | 5.8 | Shadow | 47 | 41 |
| 4.60 | 237.60 | 53.05 | 270.00 | 323.02 | 0.037 | 6.1 | Shadow | 47 | 41 |
| 4.90 | 237.90 | 53.07 | 270.00 | 323.02 | 0.051 | 6.4 | Shadow | 47 | 41 |
| 5.20 | 238.20 | 53.08 | 270.00 | 323.02 | 0.066 | 6.8 | Shadow | 47 | 40 |
| 5.50 | 238.50 | 53.10 | 270.00 | 323.02 | 0.083 | 7.1 | Shadow | 47 | 40 |

Barrier Calculations based on MRC/CHMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 231/58 - PARKIN

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 233 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 233 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 237 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 270 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | HD | A | B | C | PLD | ATT. | ZONE | LEQ HD | LEQ WB |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 234.00 | 27.03 | 270.04 | 297.02 | 0.049 | 2.3 | Bright | 48 | 46 |
| 1.30 | 234.30 | 27.02 | 270.03 | 297.02 | 0.032 | 3.5 | Bright | 48 | 44 |
| 1.60 | 234.60 | 27.01 | 270.03 | 297.02 | 0.018 | 4.2 | Bright | 48 | 44 |
| 1.90 | 234.90 | 27.00 | 270.02 | 297.02 | 0.008 | 4.6 | Bright | 48 | 43 |
| 2.20 | 235.20 | 27.00 | 270.02 | 297.02 | 0.002 | 4.9 | Bright | 48 | 43 |
| 2.50 | 235.50 | 27.00 | 270.02 | 297.02 | 0.000 | 5.0 | Bright | 48 | 43 |
| 2.80 | 235.80 | 27.01 | 270.01 | 297.02 | 0.001 | 5.0 | Shadow | 48 | 43 |
| 3.10 | 236.10 | 27.01 | 270.01 | 297.02 | 0.006 | 5.2 | Shadow | 48 | 43 |
| 3.40 | 236.40 | 27.02 | 270.01 | 297.02 | 0.015 | 5.5 | Shadow | 48 | 43 |
| 3.70 | 236.70 | 27.04 | 270.01 | 297.02 | 0.027 | 5.8 | Shadow | 48 | 42 |
| 4.00 | 237.00 | 27.06 | 270.00 | 297.02 | 0.043 | 6.2 | Shadow | 48 | 42 |
| 4.30 | 237.30 | 27.08 | 270.00 | 297.02 | 0.063 | 6.7 | Shadow | 48 | 41 |
| 4.60 | 237.60 | 27.10 | 270.00 | 297.02 | 0.086 | 7.2 | Shadow | 48 | 41 |
| 4.90 | 237.90 | 27.13 | 270.00 | 297.02 | 0.113 | 7.7 | Shadow | 48 | 40 |
| 5.20 | 238.20 | 27.16 | 270.00 | 297.02 | 0.143 | 8.2 | Shadow | 48 | 40 |

Barrier Calculations based on MRC/CHMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

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LOCATION: Lot 232/SB - PETRIE

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 231.5 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 231.5 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 234 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 60 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LED LED NB WB |
|---------------------|--------|-------|-------|--------|-------|------|--------|------------------|
| 1.00 | 232.50 | 53.01 | 60.07 | 113.01 | 0.076 | 0.0 | Bright | SS 53 |
| 1.30 | 232.80 | 53.01 | 60.06 | 113.01 | 0.058 | 1.5 | Bright | SS 52 |
| 1.60 | 233.10 | 53.00 | 60.05 | 113.01 | 0.038 | 3.1 | Bright | SS 50 |
| 1.90 | 233.40 | 53.00 | 60.04 | 113.01 | 0.024 | 5.9 | Bright | SS 49 |
| 2.20 | 233.70 | 53.00 | 60.03 | 113.01 | 0.013 | 8.6 | Bright | SS 49 |
| 2.50 | 234.00 | 53.00 | 60.02 | 113.01 | 0.006 | 4.7 | Bright | SS 48 |
| 2.80 | 234.30 | 53.00 | 60.01 | 113.01 | 0.001 | 4.9 | Bright | SS 48 |
| 3.10 | 234.60 | 53.01 | 60.01 | 113.01 | 0.000 | 5.0 | Shadow | SS 48 |
| 3.40 | 234.90 | 53.01 | 60.00 | 113.01 | 0.002 | 5.0 | Shadow | SS 48 |
| 3.70 | 235.20 | 53.02 | 60.00 | 113.01 | 0.007 | 5.2 | Shadow | SS 48 |
| 4.00 | 235.50 | 53.03 | 60.00 | 113.01 | 0.015 | 5.3 | Shadow | SS 48 |
| 4.30 | 235.80 | 53.04 | 60.00 | 113.01 | 0.027 | 5.8 | Shadow | SS 47 |
| 4.60 | 236.10 | 53.05 | 60.00 | 113.01 | 0.042 | 6.2 | Shadow | SS 47 |
| 4.90 | 236.40 | 53.07 | 60.01 | 113.01 | 0.059 | 6.6 | Shadow | SS 46 |
| 5.20 | 236.70 | 53.08 | 60.01 | 113.01 | 0.080 | 7.1 | Shadow | SS 46 |
| 5.50 | 237.00 | 53.10 | 60.02 | 113.01 | 0.105 | 7.5 | Shadow | SS 45 |
| 5.80 | 237.30 | 53.12 | 60.03 | 113.01 | 0.132 | 8.0 | Shadow | SS 45 |
| 6.10 | 237.60 | 53.14 | 60.04 | 113.01 | 0.163 | 8.4 | Shadow | SS 43 |
| 6.40 | 237.90 | 53.16 | 60.05 | 113.01 | 0.197 | 8.9 | Shadow | SS 44 |
| 6.70 | 238.20 | 53.19 | 60.06 | 113.01 | 0.234 | 9.3 | Shadow | SS 44 |
| 7.00 | 238.50 | 53.21 | 60.07 | 113.01 | 0.274 | 9.7 | Shadow | SS 43 |
| 7.30 | 238.80 | 53.24 | 60.09 | 113.01 | 0.317 | 10.2 | Shadow | SS 43 |
| 7.60 | 239.10 | 53.27 | 60.11 | 113.01 | 0.364 | 10.6 | Shadow | SS 42 |
| 7.90 | 239.40 | 53.30 | 60.13 | 113.01 | 0.413 | 11.0 | Shadow | SS 42 |
| 8.20 | 239.70 | 53.33 | 60.15 | 113.01 | 0.466 | 11.4 | Shadow | SS 42 |

Barrier Calculations based on MRC/CNRC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

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LOCATION: Lot 232/NB - PETRIE

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 231.5 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 231.5 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 234 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 60 Meter(s)
 Frequency of the Noise = 500 Hz

| BH ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LED LED NB WB |
|---------------------|--------|-------|-------|-------|-------|------|--------|------------------|
| 1.00 | 232.50 | 27.03 | 60.07 | 87.02 | 0.086 | 0.0 | Bright | SS 53 |
| 1.30 | 232.80 | 27.02 | 60.06 | 87.02 | 0.040 | 0.3 | Bright | SS 55 |
| 1.60 | 233.10 | 27.01 | 60.05 | 87.02 | 0.038 | 3.1 | Bright | SS 52 |
| 1.90 | 233.40 | 27.00 | 60.04 | 87.02 | 0.021 | 4.1 | Bright | SS 51 |
| 2.20 | 233.70 | 27.00 | 60.03 | 87.02 | 0.009 | 4.6 | Bright | SS 50 |
| 2.50 | 234.00 | 27.00 | 60.02 | 87.02 | 0.002 | 4.9 | Bright | SS 50 |
| 2.80 | 234.30 | 27.01 | 60.01 | 87.02 | 0.000 | 5.0 | Shadow | SS 50 |
| 3.10 | 234.60 | 27.01 | 60.01 | 87.02 | 0.003 | 5.1 | Shadow | SS 50 |
| 3.40 | 234.90 | 27.02 | 60.00 | 87.02 | 0.010 | 5.3 | Shadow | SS 50 |
| 3.70 | 235.20 | 27.04 | 60.00 | 87.02 | 0.022 | 5.7 | Shadow | SS 49 |
| 4.00 | 235.50 | 27.06 | 60.00 | 87.02 | 0.039 | 6.1 | Shadow | SS 49 |
| 4.30 | 235.80 | 27.08 | 60.00 | 87.02 | 0.061 | 6.7 | Shadow | SS 48 |
| 4.60 | 236.10 | 27.10 | 60.00 | 87.02 | 0.087 | 7.2 | Shadow | SS 48 |
| 4.90 | 236.40 | 27.13 | 60.01 | 87.02 | 0.119 | 7.8 | Shadow | SS 47 |
| 5.20 | 236.70 | 27.16 | 60.01 | 87.02 | 0.155 | 8.3 | Shadow | SS 47 |
| 5.50 | 237.00 | 27.19 | 60.02 | 87.02 | 0.196 | 8.9 | Shadow | SS 46 |
| 5.80 | 237.30 | 27.23 | 60.03 | 87.02 | 0.242 | 9.4 | Shadow | SS 46 |
| 6.10 | 237.60 | 27.27 | 60.04 | 87.02 | 0.292 | 9.9 | Shadow | SS 45 |
| 6.40 | 237.90 | 27.32 | 60.05 | 87.02 | 0.347 | 10.5 | Shadow | SS 45 |
| 6.70 | 238.20 | 27.36 | 60.06 | 87.02 | 0.407 | 11.0 | Shadow | SS 44 |
| 7.00 | 238.50 | 27.41 | 60.07 | 87.02 | 0.472 | 11.5 | Shadow | SS 44 |
| 7.30 | 238.80 | 27.47 | 60.09 | 87.02 | 0.541 | 11.9 | Shadow | SS 43 |
| 7.60 | 239.10 | 27.52 | 60.11 | 87.02 | 0.615 | 12.4 | Shadow | SS 43 |
| 7.90 | 239.40 | 27.58 | 60.13 | 87.02 | 0.694 | 12.8 | Shadow | SS 42 |
| 8.20 | 239.70 | 27.65 | 60.15 | 87.02 | 0.777 | 13.2 | Shadow | SS 42 |

Barrier Calculations based on MRC/CNRC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 233/SB - 300K

| | | |
|--|---------|----------------------|
| Starting Barrier Height above Ground | = 1 | Meter(s) |
| Ground Elevation at Base of Noise Barrier | = 235.2 | Meter(s) |
| Effective Noise Source Height above Ground | = 2.25 | Meter(s) As per MTC. |
| Ground Elevation at Source | = 235.2 | Meter(s) |
| Effective Noise Receiver Height above ground | = 1.5 | Meter(s) |
| Ground Elevation at base of receiving point | = 245 | Meter(s) |
| Horizontal Distance from Noise Source to Barrier | = 27 | Meter(s) |
| Horizontal Distance from Barrier to Receiver | = 150 | Meter(s) |
| Frequency of the Noise | = 500 | Hz |

| BH ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ SB |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 236.20 | 27.03 | 150.35 | 177.23 | 0.151 | 0.0 | Bright | 51 | 51 |
| 1.30 | 236.50 | 27.02 | 150.33 | 177.23 | 0.118 | 0.0 | Bright | 51 | 51 |
| 1.60 | 236.80 | 27.01 | 150.31 | 177.23 | 0.090 | 0.0 | Bright | 51 | 51 |
| 1.90 | 237.10 | 27.00 | 150.29 | 177.23 | 0.065 | 0.0 | Bright | 51 | 51 |
| 2.20 | 237.40 | 27.00 | 150.28 | 177.23 | 0.045 | 2.7 | Bright | 51 | 48 |
| 2.50 | 237.70 | 27.00 | 150.26 | 177.23 | 0.028 | 3.8 | Bright | 51 | 47 |
| 2.80 | 238.00 | 27.01 | 150.24 | 177.23 | 0.015 | 4.4 | Bright | 51 | 47 |
| 3.10 | 238.30 | 27.01 | 150.22 | 177.23 | 0.006 | 4.7 | Bright | 51 | 46 |
| 3.40 | 238.60 | 27.02 | 150.21 | 177.23 | 0.001 | 4.9 | Bright | 51 | 46 |
| 3.70 | 238.90 | 27.04 | 150.19 | 177.23 | 0.000 | 5.0 | Shadow | 51 | 46 |
| 4.00 | 239.20 | 27.06 | 150.18 | 177.23 | 0.003 | 5.1 | Shadow | 51 | 46 |
| 4.30 | 239.50 | 27.08 | 150.16 | 177.23 | 0.010 | 5.3 | Shadow | 51 | 46 |
| 4.60 | 239.80 | 27.10 | 150.15 | 177.23 | 0.020 | 5.6 | Shadow | 51 | 45 |
| 4.90 | 240.10 | 27.13 | 150.14 | 177.23 | 0.035 | 6.0 | Shadow | 51 | 45 |
| 5.20 | 240.40 | 27.16 | 150.12 | 177.23 | 0.053 | 6.5 | Shadow | 51 | 45 |
| 5.50 | 240.70 | 27.19 | 150.11 | 177.23 | 0.076 | 7.0 | Shadow | 51 | 44 |
| 5.80 | 241.00 | 27.23 | 150.10 | 177.23 | 0.102 | 7.5 | Shadow | 51 | 44 |
| 6.10 | 241.30 | 27.27 | 150.09 | 177.23 | 0.132 | 8.0 | Shadow | 51 | 43 |
| 6.40 | 241.60 | 27.32 | 150.08 | 177.23 | 0.166 | 8.5 | Shadow | 51 | 43 |
| 6.70 | 241.90 | 27.36 | 150.07 | 177.23 | 0.204 | 9.0 | Shadow | 51 | 42 |
| 7.00 | 242.20 | 27.41 | 150.06 | 177.23 | 0.245 | 9.4 | Shadow | 51 | 42 |

Barrier Calculations based on NRC/CWMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 233/SB - 300K

| | | |
|--|---------|----------------------|
| Starting Barrier Height above Ground | = 1 | Meter(s) |
| Ground Elevation at Base of Noise Barrier | = 235.2 | Meter(s) |
| Effective Noise Source Height above Ground | = 2.25 | Meter(s) As per MTC. |
| Ground Elevation at Source | = 235.2 | Meter(s) |
| Effective Noise Receiver Height above ground | = 1.5 | Meter(s) |
| Ground Elevation at base of receiving point | = 245 | Meter(s) |
| Horizontal Distance from Noise Source to Barrier | = 53 | Meter(s) |
| Horizontal Distance from Barrier to Receiver | = 150 | Meter(s) |
| Frequency of the Noise | = 500 | Hz |

| BH ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ NB | LEQ SB |
|---------------------|--------|-------|--------|--------|-------|------|--------|-----------|-----------|
| 1.00 | 236.20 | 53.01 | 150.35 | 203.20 | 0.166 | 0.0 | Bright | 50 | 50 |
| 1.30 | 236.50 | 53.01 | 150.33 | 203.20 | 0.140 | 0.0 | Bright | 50 | 50 |
| 1.60 | 236.80 | 53.00 | 150.31 | 203.20 | 0.116 | 0.0 | Bright | 50 | 50 |
| 1.90 | 237.10 | 53.00 | 150.29 | 203.20 | 0.094 | 0.0 | Bright | 50 | 50 |
| 2.20 | 237.40 | 53.00 | 150.28 | 203.20 | 0.074 | 0.0 | Bright | 50 | 50 |
| 2.50 | 237.70 | 53.00 | 150.26 | 203.20 | 0.057 | 1.2 | Bright | 50 | 49 |
| 2.80 | 238.00 | 53.00 | 150.24 | 203.20 | 0.042 | 2.9 | Bright | 50 | 47 |
| 3.10 | 238.30 | 53.01 | 150.22 | 203.20 | 0.029 | 3.7 | Bright | 50 | 46 |
| 3.40 | 238.60 | 53.01 | 150.21 | 203.20 | 0.019 | 4.2 | Bright | 50 | 46 |
| 3.70 | 238.90 | 53.02 | 150.19 | 203.20 | 0.011 | 4.6 | Bright | 50 | 45 |
| 4.00 | 239.20 | 53.03 | 150.18 | 203.20 | 0.005 | 4.8 | Bright | 50 | 45 |
| 4.30 | 239.50 | 53.04 | 150.16 | 203.20 | 0.001 | 4.9 | Bright | 50 | 45 |
| 4.60 | 239.80 | 53.05 | 150.15 | 203.20 | 0.000 | 5.0 | Bright | 50 | 45 |
| 4.90 | 240.10 | 53.07 | 150.14 | 203.20 | 0.001 | 5.0 | Shadow | 50 | 45 |
| 5.20 | 240.40 | 53.08 | 150.12 | 203.20 | 0.004 | 5.1 | Shadow | 50 | 45 |
| 5.50 | 240.70 | 53.10 | 150.11 | 203.20 | 0.010 | 5.3 | Shadow | 50 | 45 |
| 5.80 | 241.00 | 53.12 | 150.10 | 203.20 | 0.018 | 5.6 | Shadow | 50 | 44 |
| 6.10 | 241.30 | 53.14 | 150.09 | 203.20 | 0.028 | 5.9 | Shadow | 50 | 44 |
| 6.40 | 241.60 | 53.16 | 150.08 | 203.20 | 0.041 | 6.2 | Shadow | 50 | 44 |
| 6.70 | 241.90 | 53.19 | 150.07 | 203.20 | 0.055 | 6.5 | Shadow | 50 | 43 |
| 7.00 | 242.20 | 53.21 | 150.06 | 203.20 | 0.072 | 6.9 | Shadow | 50 | 43 |
| 7.30 | 242.50 | 53.24 | 150.05 | 203.20 | 0.092 | 7.3 | Shadow | 50 | 43 |
| 7.60 | 242.80 | 53.27 | 150.05 | 203.20 | 0.113 | 7.7 | Shadow | 50 | 42 |
| 7.90 | 243.10 | 53.30 | 150.04 | 203.20 | 0.137 | 8.1 | Shadow | 50 | 42 |
| 8.20 | 243.40 | 53.33 | 150.03 | 203.20 | 0.163 | 8.5 | Shadow | 50 | 42 |

Barrier Calculations based on NRC/CWMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 234/SB - R.C. Diocese

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 235.2 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 235.2 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 246.2 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 27 Meter(s)
 Horizontal Distance from Barrier to Receiver = 330 Meter(s)
 Frequency of the Noise = 500 Hz

| BN ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ LEQ NB NB |
|---------------------|--------|-------|--------|--------|-------|------|--------|------------------|
| 1.00 | 236.20 | 27.03 | 330.20 | 357.15 | 0.082 | 0.0 | Bright | 47 47 |
| 1.30 | 236.50 | 27.02 | 330.19 | 357.15 | 0.060 | 0.5 | Bright | 47 47 |
| 1.60 | 236.80 | 27.01 | 330.18 | 357.15 | 0.041 | 3.0 | Bright | 47 44 |
| 1.90 | 237.10 | 27.00 | 330.17 | 357.15 | 0.025 | 3.9 | Bright | 47 43 |
| 2.20 | 237.40 | 27.00 | 330.16 | 357.15 | 0.014 | 4.4 | Bright | 47 43 |
| 2.50 | 237.70 | 27.00 | 330.15 | 357.15 | 0.006 | 4.8 | Bright | 47 42 |
| 2.80 | 238.00 | 27.01 | 330.14 | 357.15 | 0.001 | 4.9 | Bright | 47 42 |
| 3.10 | 238.30 | 27.01 | 330.13 | 357.15 | 0.000 | 5.0 | Shadow | 47 42 |
| 3.40 | 238.60 | 27.02 | 330.13 | 357.15 | 0.003 | 5.1 | Shadow | 47 42 |
| 3.70 | 238.90 | 27.04 | 330.12 | 357.15 | 0.009 | 5.3 | Shadow | 47 42 |
| 4.00 | 239.20 | 27.06 | 330.11 | 357.15 | 0.019 | 5.6 | Shadow | 47 41 |
| 4.30 | 239.50 | 27.08 | 330.10 | 357.15 | 0.032 | 6.0 | Shadow | 47 41 |
| 4.60 | 239.80 | 27.10 | 330.09 | 357.15 | 0.049 | 6.4 | Shadow | 47 41 |
| 4.90 | 240.10 | 27.13 | 330.09 | 357.15 | 0.070 | 6.9 | Shadow | 47 40 |
| 5.20 | 240.40 | 27.16 | 330.08 | 357.15 | 0.094 | 7.4 | Shadow | 47 40 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: 234/NB - R.C. Diocese

Starting Barrier Height above Ground = 1 Meter(s)
 Ground Elevation at Base of Noise Barrier = 235.2 Meter(s)
 Effective Noise Source Height above Ground = 2.25 Meter(s) As per MTC.
 Ground Elevation at Source = 235.2 Meter(s)
 Effective Noise Receiver Height above ground = 1.5 Meter(s)
 Ground Elevation at base of receiving point = 246.2 Meter(s)
 Horizontal Distance from Noise Source to Barrier = 53 Meter(s)
 Horizontal Distance from Barrier to Receiver = 330 Meter(s)
 Frequency of the Noise = 500 Hz

| BN ABOVE P.L. | HB | A | B | C | PLD | ATT. | ZONE | LEQ LEQ NB NB |
|---------------------|--------|-------|--------|--------|-------|------|--------|------------------|
| 1.00 | 236.20 | 53.01 | 330.20 | 383.14 | 0.078 | 0.0 | Bright | 46 46 |
| 1.30 | 236.50 | 53.01 | 330.19 | 383.14 | 0.061 | 0.0 | Bright | 46 46 |
| 1.60 | 236.80 | 53.00 | 330.18 | 383.14 | 0.047 | 2.5 | Bright | 46 44 |
| 1.90 | 237.10 | 53.00 | 330.17 | 383.14 | 0.034 | 3.4 | Bright | 46 43 |
| 2.20 | 237.40 | 53.00 | 330.16 | 383.14 | 0.024 | 4.0 | Bright | 46 42 |
| 2.50 | 237.70 | 53.00 | 330.15 | 383.14 | 0.015 | 4.4 | Bright | 46 42 |
| 2.80 | 238.00 | 53.00 | 330.14 | 383.14 | 0.008 | 4.6 | Bright | 46 41 |
| 3.10 | 238.30 | 53.01 | 330.13 | 383.14 | 0.004 | 4.8 | Bright | 46 41 |
| 3.40 | 238.60 | 53.01 | 330.13 | 383.14 | 0.001 | 4.9 | Bright | 46 41 |
| 3.70 | 238.90 | 53.02 | 330.12 | 383.14 | 0.000 | 5.0 | Shadow | 46 41 |
| 4.00 | 239.20 | 53.03 | 330.11 | 383.14 | 0.001 | 5.0 | Shadow | 46 41 |
| 4.30 | 239.50 | 53.04 | 330.10 | 383.14 | 0.004 | 5.1 | Shadow | 46 41 |
| 4.60 | 239.80 | 53.05 | 330.09 | 383.14 | 0.009 | 5.3 | Shadow | 46 41 |
| 4.90 | 240.10 | 53.07 | 330.09 | 383.14 | 0.017 | 5.5 | Shadow | 46 40 |
| 5.20 | 240.40 | 53.08 | 330.08 | 383.14 | 0.026 | 5.8 | Shadow | 46 40 |
| 5.50 | 240.70 | 53.10 | 330.07 | 383.14 | 0.037 | 6.1 | Shadow | 46 40 |
| 5.80 | 241.00 | 53.12 | 330.07 | 383.14 | 0.050 | 6.4 | Shadow | 46 40 |

Barrier Calculations based on NRC/CMC model.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 257/SB - REED

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 249.6 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method.
 Ground Elevation at Source = 249.6 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 241 M.
 Horizontal Distance from Noise Source to Barrier = 10.5 M.
 Horizontal Distance from Barrier to Receiver = 55 M.
 Frequency of the Noise = 500 Hz

| NO ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | LED NO NO |
|---------------------|--------|-------|-------|-------|-------|------|--------|--------------|
| 0.00 | 249.60 | 10.74 | 55.46 | 66.16 | 0.031 | 3.6 | Bright | 57 53 |
| 0.30 | 249.90 | 10.68 | 55.50 | 66.16 | 0.011 | 4.5 | Bright | 57 52 |
| 0.60 | 250.20 | 10.63 | 55.54 | 66.16 | 0.001 | 4.9 | Bright | 57 52 |
| 0.90 | 250.50 | 10.59 | 55.58 | 66.16 | 0.001 | 5.0 | Shadow | 57 52 |
| 1.20 | 250.80 | 10.55 | 55.62 | 66.16 | 0.011 | 5.3 | Shadow | 57 52 |
| 1.50 | 251.10 | 10.53 | 55.67 | 66.16 | 0.031 | 5.9 | Shadow | 57 51 |
| 1.80 | 251.40 | 10.51 | 55.72 | 66.16 | 0.061 | 6.7 | Shadow | 57 50 |
| 2.10 | 251.70 | 10.50 | 55.76 | 66.16 | 0.101 | 7.5 | Shadow | 57 50 |
| 2.40 | 252.00 | 10.50 | 55.81 | 66.16 | 0.152 | 8.3 | Shadow | 57 49 |
| 2.70 | 252.30 | 10.51 | 55.87 | 66.16 | 0.212 | 9.1 | Shadow | 57 48 |

Barrier Calculations based on MTC/CNHC model.

MS = 251.85 (ELEVATION AT NOISE SOURCE)
 NR = 242.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MNA1.
 DSB = 10.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 55 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 257/NO - REED

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 249.6 M.
 Effective Noise Source Height above Ground = 2.25 M.As per MTC method.
 Ground Elevation at Source = 249.6 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 241 M.
 Horizontal Distance from Noise Source to Barrier = 39.5 M.
 Horizontal Distance from Barrier to Receiver = 55 M.
 Frequency of the Noise = 500 Hz

| NO ABOVE P.L. | NO | A | B | C | PLD | ATT. | ZONE | LED NO NO |
|---------------------|--------|-------|-------|-------|-------|------|--------|--------------|
| 0.00 | 249.60 | 39.56 | 55.46 | 94.96 | 0.059 | 6.6 | Shadow | 55 48 |
| 0.30 | 249.90 | 39.55 | 55.50 | 94.96 | 0.082 | 7.1 | Shadow | 55 48 |

Barrier Calculations based on MTC/CNHC model.

MS = 251.85 (ELEVATION AT NOISE SOURCE)
 NR = 242.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 DSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD4 MNA1.
 DSB = 39.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 55 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LEQ NO = LEQ (DBA) AT RECEIVER NO BARRIER.
 LEQ NB = LEQ (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 250/SB - ROBERTS

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 249.4 M.
 Effective Noise Source Height above Ground = 2.25 M.As per NTC method.
 Ground Elevation at Source = 249.4 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 246 M.
 Horizontal Distance from Noise Source to Barrier = 39.5 M.
 Horizontal Distance from Barrier to Receiver = 60 M.
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LED | LED |
|-------|--------|-------|-------|-------|--------|------|--------|-----|-----|
| ABOVE | HB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| P.L. | | | | | | | | | |
| 0.00 | 249.40 | 39.56 | 60.03 | 99.59 | 0.008 | 4.7 | Bright | SS | 50 |
| 0.30 | 249.70 | 39.55 | 60.04 | 99.59 | 0.002 | 4.9 | Bright | SS | 50 |
| 0.60 | 250.00 | 39.53 | 60.05 | 99.59 | -0.000 | 0.0 | Bright | SS | 53 |
| 0.90 | 250.30 | 39.52 | 60.07 | 99.59 | 0.002 | 5.0 | Shadow | SS | 50 |
| 1.20 | 250.60 | 39.51 | 60.08 | 99.59 | 0.007 | 5.2 | Shadow | SS | 50 |
| 1.50 | 250.90 | 39.51 | 60.10 | 99.59 | 0.017 | 5.5 | Shadow | SS | 49 |
| 1.80 | 251.20 | 39.50 | 60.11 | 99.59 | 0.030 | 5.9 | Shadow | SS | 49 |
| 2.10 | 251.50 | 39.50 | 60.13 | 99.59 | 0.047 | 6.3 | Shadow | SS | 49 |
| 2.40 | 251.80 | 39.50 | 60.15 | 99.59 | 0.068 | 6.8 | Shadow | SS | 48 |
| 2.70 | 252.10 | 39.50 | 60.18 | 99.59 | 0.092 | 7.3 | Shadow | SS | 48 |

Barrier Calculations based on NRC/CNHC model.

HS = 251.65 (ELEVATION AT NOISE SOURCE)
 HR = 247.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BAR.
 D = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD& MMAL.
 BSB = 39.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 60 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED MB = LED (DBA) AT RECEIVER WITH BARRIER.

NOISE BARRIER ATTENUATION ALTERNATIVES

LOCATION: Lot 250/NB - ROBERTS

Starting Barrier Height above Ground = 0 M.
 Ground Elevation at Base of Noise Barrier = 249.4 M.
 Effective Noise Source Height above Ground = 2.25 M.As per NTC method.
 Ground Elevation at Source = 249.4 M.
 Effective Noise Receiver Height above ground = 1.5 M.
 Ground Elevation at base of receiving point = 246 M.
 Horizontal Distance from Noise Source to Barrier = 10.5 M.
 Horizontal Distance from Barrier to Receiver = 60 M.
 Frequency of the Noise = 500 Hz

| BH | HB | A | B | C | PLD | ATT. | ZONE | LED | LED |
|-------|--------|-------|-------|-------|-------|------|--------|-----|-----|
| ABOVE | HB | A | B | C | PLD | ATT. | ZONE | NB | NB |
| P.L. | | | | | | | | | |
| 0.00 | 249.40 | 10.74 | 60.03 | 70.62 | 0.146 | 0.0 | Bright | 57 | 57 |
| 0.30 | 249.70 | 10.68 | 60.04 | 70.62 | 0.098 | 0.0 | Bright | 57 | 57 |
| 0.60 | 250.00 | 10.63 | 60.05 | 70.62 | 0.059 | 0.8 | Bright | 57 | 56 |
| 0.90 | 250.30 | 10.59 | 60.07 | 70.62 | 0.030 | 3.7 | Bright | 57 | 53 |
| 1.20 | 250.60 | 10.55 | 60.08 | 70.62 | 0.010 | 4.6 | Bright | 57 | 52 |
| 1.50 | 250.90 | 10.53 | 60.10 | 70.62 | 0.001 | 4.9 | Bright | 57 | 52 |
| 1.80 | 251.20 | 10.51 | 60.11 | 70.62 | 0.002 | 5.0 | Shadow | 57 | 52 |
| 2.10 | 251.50 | 10.50 | 60.13 | 70.62 | 0.012 | 5.4 | Shadow | 57 | 52 |
| 2.40 | 251.80 | 10.50 | 60.15 | 70.62 | 0.033 | 6.0 | Shadow | 57 | 51 |
| 2.70 | 252.10 | 10.51 | 60.18 | 70.62 | 0.064 | 6.7 | Shadow | 57 | 50 |
| 3.00 | 252.40 | 10.53 | 60.20 | 70.62 | 0.104 | 7.5 | Shadow | 57 | 49 |
| 3.30 | 252.70 | 10.55 | 60.22 | 70.62 | 0.155 | 8.3 | Shadow | 57 | 49 |
| 3.60 | 253.00 | 10.59 | 60.25 | 70.62 | 0.216 | 9.1 | Shadow | 57 | 48 |

Barrier Calculations based on NRC/CNHC model.

HS = 251.65 (ELEVATION AT NOISE SOURCE)
 HR = 247.5 (ELEVATION AT RECEIVING POINT)
 BH = HEIGHT OF BARRIER ABOVE PROPERTY LINE.
 NB = ELEVATION AT TOP OF BARRIER.
 A = STRAIGHT LINE DIST. FROM NOISE SOURCE TO TOP OF BARRIER.
 B = STRAIGHT LINE DIST. FROM TOP OF BARRIER TO RECEIVER.
 C = STRAIGHT LINE DIST. FROM NOISE SOURCE TO RECEIVER.
 PLD = PATH LENGTH DIFFERENCE = A+B-C.
 BSB = HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER.
 ATT = BARRIER ATTENUATION REFERENCE PLD& MMAL.
 BSB = 10.5 (HORIZONTAL DIST. FROM NOISE SOURCE TO BARRIER)
 DBR = 60 (HORIZONTAL DIST. FROM BARRIER TO RECEIVER)
 LED NB = LED (DBA) AT RECEIVER NO BARRIER.
 LED MB = LED (DBA) AT RECEIVER WITH BARRIER.

APPENDIX I

Natural Environment Data

NATURAL ENVIRONMENTAL DATA

Selected climatic parameters for the Study Area are as follows:

| | |
|--|----------|
| Mean daily temperature for January | -4.4°C |
| Mean daily minimum temperature for January | -8°C |
| Mean daily temperature for July | 21°C |
| Mean daily maximum temperature for July | 28°C |
| Mean annual "frost-free" period | 150 days |
| Mean annual "heat units" for corn | 3,000 |
| Mean annual precipitation | 80 cm |
| Mean annual snowfall | 120 cm |

The following provides species lists of wildlife observed and a discussion of the consultant's impressions regarding the wildlife habitats encountered in the waterfowl nesting area north of Chippewa Road:

| | |
|---------------------------|-------------------------|
| Great Blue Heron | Wood Thrush |
| Green-backed Heron | American Robin |
| Canada Goose | Gray Catbird |
| Blue-winged Teal | Brown Thrasher |
| American Black Duck | European Starling |
| Mallard | Solitary Vireo |
| Turkey Vulture | Warbling Vireo |
| Red-tailed Hawk | Red-eyed Vireo |
| American Kestrel | Yellow Warbler |
| Ring-billed Gull | Chestnut-sided Warbler |
| Rock Dove | Black-and-White Warbler |
| Mourning Dove | American Redstart |
| Great Horned Owl | Overbird |
| Ruby-throated Hummingbird | Common Yellowthroat |
| Hairy Woodpecker | Scarlet Tanager |
| Northern Flicker | Northern Cardinal |
| Pileated Woodpecker | Rose-breasted Grosbeak |
| Eastern Wood pewee | Indigo Bunting |
| Least Flycatcher | Chipping Sparrow |
| Great Crested Flycatcher | Field Sparrow |
| Eastern Kingbird | Savannah Sparrow |
| Tree Swallow | Song Sparrow |
| Barn Swallow | Bobolink |
| Blue Jay | Red-winged Blackbird |
| American Crow | Eastern Meadowlark |
| Black-capped Chickadee | Common Grackle |

White-breasted Nuthatch
Brown Creeper
Veery
Gray-checked Thrush
Swainson's Thrush

Brown-headed Cowbird
Northern Oriole
American Goldfinch
House Sparrow

PROVINCIAL WATER QUALITY OBJECTIVES FOR SELECTED PARAMETERS

Mammals

Cottontail
E. Gray Squirrel
Woodchuck
E. Chimpunk

Red Fox
Raccoon
White-tailed Deer

Herptiles

Red-backed Salamander
W. Spring Peeper
Green Frog
E. Gartner Snake

American Toad
E. Gray Treefrog
W. Leopard Frog
E. Milk Snake

| Parameter | Provincial Objectives |
|-----------|-----------------------|
|-----------|-----------------------|

| | |
|----------------|-------------------------------------|
| total coliform | - should not exceed 1000 per 100 mL |
|----------------|-------------------------------------|

| | |
|----------------|------------------------------------|
| fecal coliform | - should not exceed 100 per 100 mL |
|----------------|------------------------------------|

| | |
|-------------------|---|
| water temperature | - required that the natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment |
|-------------------|---|

| | |
|------------------|--|
| dissolved oxygen | - to maintain cold-water biota, D.O. should not be less than 8 mg/L at 0°C, 6 mg/L at 15°C, and 5 mg/L at 25°C |
|------------------|--|

| | |
|--|---|
| | - to maintain warm-water biota, D.O. should not be less than 7 mg/L at 0°C, 5 mg/L at 15°C and 4 mg/L at 25°C |
|--|---|

| | |
|------------|--|
| phosphorus | - should not exceed 0.03 mg/L in order to prevent excessive plant and algae growth |
|------------|--|

| | |
|-------------------|------------------------------|
| kjeldahl nitrogen | - should not exceed 0.5 mg/L |
|-------------------|------------------------------|

| | |
|-----------|------------------------------|
| chlorides | - should not exceed 250 mg/L |
|-----------|------------------------------|

The woodlot adjacent to the west was interesting and warrants some discussion. It contains a wide variety of communities and habitats making it desirable for wildlife. A majority of the wildlife listed previously were observed in this woodlot. However, the diversity of habitat available, including mature forest, wet meadow, immature scrub and lowland forest, offers some potential as wildlife habitat.

The Canada Land Inventory ratings of capability to produce common field crops are provided. The ratings are based on a scale from the best, Class 1, to the worst, Class 7. In addition, the most common limitations or problems associated with each soil type are indicated.

Designated Environmentally Sensitive Areas

There are four designated environmentally significant areas in the Hamilton-Wentworth Official Plan. There are shown on Exhibit 4.2 and are as follows:

- Hamilton Golf and Country Club north of Highway 403;
- Tiffany Falls, in the vicinity of the Mohawk/Highway 403 interchange;
- Hamilton Mountain (Radial Line) in the vicinity of the Mohawk/Highway 403 interchange;
- The headwaters of the Ancaster Creek North of Highway 53, west of Upper Horning Drive.

| Soil Groupings | CLI Agricultural Ratings | Limitations or Problems |
|---|--|--|
| A. Soils developed on calcareous brown silty clay loam till | | |
| (a) Well drained | | |
| 1. Ancaster silt loam | 1 to 5 ^d _t | - steep slopes - erosion |
| B. Soils developed on calcareous gray clay till overlain by lacustrine deposits | | |
| (a) Moderately well drained | | |
| 1. Smithville silt loam | 1 to 4 ^d _t | - hard subsoils |
| (b) Imperfectly drained | | |
| 1. Binbrook silt loam | 1 (drained) | - hard subsoils - impeded drainage |
| C. Soils developed on lacustrine fine sandy loam and silt loam | | |
| (a) Well drained | | |
| 1. Brant silt loam | 1 to 4 ^e _t | - erosion |
| (b) Imperfectly drained | | |
| 1. Tuscola silt loam | 1 (drained) | - impeded drainage |
| (c) Poorly drained | | |
| 1. Colwood silt loam | 2w | - poor drainage |
| D. Soils developed on lacustrine silty clay loam and silty clay | | |
| (a) Well drained | | |
| 1. Brantford silt loam | 1 to 4 ^e _t | - erosion |
| (b) Imperfectly drained | | |
| 1. Beverly silt loam | 1 (drained) | - impeded drainage |
| (c) Poorly drained | | |
| 1. Toledo silty clay loam | 2w to 3 ^d _w | - poor drainage |
| 2. Toledo silt loam | 2w to 3 ^d _w | |
| E. Soils developed on medium and fine outwash sand | | |
| (a) Well Drained | | |
| 1. Grimsby sandy loam | 2 ^f _m to 4 ^s _t | - moisture deficiency - lower natural fertility |
| F. Soils developed on sand overlying coarse, reddish gravel | | |
| (a) Well drained | | |
| 1. Springvale sandy loam | 2 ^f _m to 3 ^s _t | - moisture deficiency - lower natural fertility |
| G. Soils developed on organic deposits | | |
| 1. Muck | Not rated | - poor drainage |
| H. Soils developed on recent alluvial silt clay loam and silty clay loam | | |
| (a) Variable drainage | | |
| 1. Alberton silt loam | Variable and dependent on adjacent soils | - periodic flooding |
| 2. Alberton silty clay loam | | - periodic flooding |
| I. Ravines | 7 ^e _t | - extreme slopes - erosion |

PHYSICAL CHARACTERISTICS OF THE
WATERCOURSES IN THE STUDY AREA

| | <u>Welland River</u> | <u>Twenty Mile Creek</u> | <u>Three Mile Creek</u> | <u>Small Unnamed Creeks</u> |
|---------------------|---|---------------------------------|---------------------------------|---------------------------------|
| CURRENT | slow | moderate | moderate | slow |
| DEPTH (m) | 0.5 to 1 | 0.2 to 0.4 | 0.1 to 0.2 | 0.1 to 0.2 |
| WIDTH (m) | 2 to 4 | 2 to 4 | 1 to 3 | 1 to 2 |
| WATER QUALITY | moderate, suspended sediment, some stag- nant pools | poor, heavy algae growth | moderate | poor, heavy algae growth |
| BANK SLOPE | flat | flat | flat | flat |
| FISH HABITAT | moderate where water depth is sufficient | poor, intermittent stream | poor, intermittent stream | poor, intermittent stream |
| BOTTOM SUBSTRATE | silt, sand | silt, sand | sand, gravel | silt, sand |

APPENDIX J

Pre-Submission Comments



Ontario

Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Telephone: 224-7599

May 6, 1987

TO:

See attached list

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

Enclosed is the draft Environmental Assessment (E.A.) produced by the Ministry of Transportation and Communications for the above-noted project. You have been identified as the designated E.A. review co-ordinator for your agency or Ministry (from the Ministry of the Environment's government reviewers listing). This draft E.A. is submitted for your review in conjunction with the pre-submission consultation process for this project.

A review of this draft E.A. by your agency or Ministry is requested so that its strengths, as well as any weaknesses it may have, are evaluated prior to formal submission to the Ministry of the Environment (M.O.E.). If, during the review of this draft, reviewers identify significant weaknesses, they should indicate what changes and/or research are required to achieve a satisfactory E.A. submission.

Each review co-ordinator is asked to arrange for a review of this draft E.A. and to provide a single agency or Ministry response, as if it were a formal review. To facilitate this review, Attachment #1 contains a series of questions derived from those normally asked by M.O.E. for a formal review of an E.A. Responses to these, as well as any additional comments you may have, are requested so that we may evaluate the completeness of the draft E.A. prior to formal submission.

NOTE:

This Appendix contains information relating to the Environmental Assessment Report Pre-submission Draft Review.

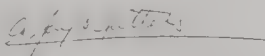
As part of the pre-submission consultation process followed in this study, selected government Ministries and other agencies, which normally act as formal reviewers for Environmental Assessments, were requested to review a draft copy of the study's Environmental Assessment Report and to comment on several questions relating to the draft document's completeness.

This Appendix contains copies of the transmittal of the draft for review, and selected correspondence from and to various reviewers. The review comments were considered in the finalization of the Environmental Assessment Report for formal submission to the Ministry of the Environment.

To maintain our current schedule, you are asked to provide your comments to me by June 10, 1987 at the latest. If you anticipate any problems in completing this review, I would appreciate hearing from you as soon as possible. If you have any questions about the draft E.A. or the project to which it applies, please call me at (416) 224-7599.

Thank you in advance for your assistance with this review. Please return all comments directly to me. (This review is not co-ordinated by M.O.E.)

Yours truly,



A. Jay Nuttall
Environmental Planner

AJN/et
Attach. & Encl.

cc: P. Shaver
H. A. McNeely
L. Dutchak
R. Hodgins
Distribution List

Draft Environmental Assessment
Highway 6 New, Hamilton
to Caledonia
W.P. 36-84-00
Pre-Submission Draft Review

The questions listed below are designed to obtain advice from reviewers on the quality of the draft environmental assessment and if necessary, how to improve it prior to formal submission to the Ministry of the Environment.

In a formal submission, the Ministry of the Environment (MOE) Review Co-ordinator evaluates whether the EA contains all the components of subsection 5(3) of the EA Act. Answers to questions 1 through 4 address the analysis of the technical quality and completeness of those components. If an EA contains the proper components and reviewers are satisfied with their quality and completeness, the MOE Review Co-ordinator will conclude that the EA meets the requirements of subsection 5(3) of the Act. If the EA is deficient in meeting either criterion, the EA Branch may conclude that the EA does not meet the requirements of subsection 5(3).

Question 5 aims to ensure that actions necessary to meet reviewers' requirements are specified in the EA and will be carried out to the reviewer's satisfaction.

Question 6 provides advice on how well the undertaking addresses the policy interests of a particular Ministry. Question 7 provides information on the roles reviewers played during pre-submission consultation as well as the quality of the consultation process.

Please address the following questions in your evaluation of the EA from the perspective of your Ministry's or agency's mandate. If strengths or weaknesses are identified, please indicate their significance. If weaknesses are significant, please indicate what changes and/or research is required to obtain a satisfactory EA document.

1. Are the data, analyses and conclusions in the EA satisfactory, i.e., are these relevant and substantiated?
 - Does the information in the EA cover all relevant issues at an appropriate level of detail?
 - Are you satisfied with the methods and techniques described in the EA to predict environmental effects and any mitigation measures necessary to reduce those effects?
 - Is the analysis logical and easy to follow?
2. Do you feel that the proponent has chosen an appropriate range of alternatives to investigate in the EA?

3. Are the monitoring and contingency plans specified by the proponent in the EA adequate?
4. Is the way in which the proponent intends to implement the undertaking satisfactory?
 - * Does the undertaking comply with your Ministry's or agency's legislative requirements?
5. Has the proponent clearly indicated how compliance reporting regarding commitments in the EA related to your mandate will be fulfilled?
6. Are you satisfied with the importance, relative to other aspects of the environment, given to your interests in the selection of the undertaking?
 - * Is the undertaking satisfactory to you? If not, which alternative(s) do you prefer and why?
7. What role did your agency play during pre-submission consultation, e.g., a technical resource, a member of a working group, a reviewer?
 - * Are you satisfied with the way in which your advice at that stage of the EA process was taken into consideration by the proponent in the preparation of the EA?

In preparing your overall evaluation, please take account of the following considerations:

- * Reasons, with substantiation, should be given for any conclusions.
- * Adequate consideration should be given to all alternatives, not just the recommended one(s).

The questions above are not meant to restrict the scope of the review. Please provide any additional comments from the perspective of your mandate which you feel are important to this evaluation.

HIGHWAY 6 NEW PRE-SUBMISSION DRAFT CIRCULATION

W.P. 36-84-00

Mr. Donald Dunn
Director
Foodland Preservation Branch
Ministry of Agriculture
and Food
8th Floor
801 Bay Street
Toronto, Ontario
M7A 2B2

Attention: Susan Singh

Mr. Carl Thorpe
Manager, Heritage Programs Unit
Heritage Branch
Ministry of Citizenship & Culture
2nd Floor
77 Bloor Street West
Toronto, Ontario
M7A 2R9

Attention: Mr. P. J. Carruthers

Mr. M. Hamilton
Regional Director
Ministry of Community
& Social Services
195 Dufferin Ave.
IBM Building, 5th Floor
London, Ontario
N6A 1K7

Mr. Russ Powell
Executive Director
Association of Conservation
Authorities of Ontario

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71 King Road
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LOG 1K0

Mr. A. B. McCoy
Chairman
Hamilton Region Conservation
Authority
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838 Mineral Springs Road
Ancaster, Ontario
L9G 3L3

Mr. J. S. Bauer
Chairman
Grand River Conservation
Authority
P.O. Box 729
400 Clyde Road
Cambridge, Ontario
N1R 5W6

Mr. F. D. Goldring
Chairman
Niagara Peninsula Conservation
Authority
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Allanburg, Ontario
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Mr. Theo Grootenboer
Chief, Capital Grants
School Business and Finance Branch
Architectural Services Section
Ministry of Education
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M7A 1L2

Mr. P. Joseph
Supervisor, Land Use & Noise
Environmental Approvals and
Land Use Planning Branch
Ministry of the Environment
8th Floor, 135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Attention: Mr. Ian B. Veitch
Head-Land Use Planning

Mr. Michael D. McLeod
Senior Planner - Provincial Unit
Environmental Assessment Branch
7th Floor, 135 St. Clair Avenue West
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M4V 1P5

Attn: Ms. K. Underwood

Mr. Barry Crowe
Manager
Land use Analysis and
Appraisal Section
Realty Services Branch
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5th Floor, Ferguson Block
77 Wellesley Street West
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M7A 1N3

Dr. Barbara Blake
Director, Public Health
Public Health Branch
Ministry of Health
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M4H 1A9

Attention: Mr. Peter Block

Mr. Wm. M. C. Wilson
Planner
Planning & Development Branch
Ministry of Housing
16th Floor, 777 Bay Street
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M5G 2E5

Mr. Jack R. Delaney
Manager
Plant Location and Municipal Liaison
Ministry of Industry, Trade
& Technology
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Mr. Alan D. Heath
Director
Standards and Programs Branch
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Dr. D. Kittle
Medical Officer of Health
Haldimand-Norfolk Regional Health Unit
P.O. Box 247
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Dr. A. I. Cunningham
Medical Officer of Health
Hamilton-Wentworth Regional Health Unit
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Mr. Ron Kennedy
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Executive Co-ordinator
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Mr. L. A. Douglas
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Policy and Planning Secretariat
Ministry of Natural Resources
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Toronto, Ontario
M7A 1W3

Mrs. Michele Fordyce
Regional Director
Central Region
Ministry of Natural Resources
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Richmond Hill, Ontario
L4C 3C9

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Senior Policy Advisor
Policy Planning Branch
Ministry of Northern Development
& Mines
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Ms. Lynn Celgar
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Branch
Administration Division
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Chief, Technical, Research &
Consulting Services
Office of the Fire Marshal
Ministry of the Solicitor General
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Toronto, Ontario
M4H 1A8

Mr. C. J. A. Coles
Director - Superintendent
Policy and Planning Branch
Ontario Provincial Police
Ministry of the Solicitor General
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Toronto, Ontario
M7A 2S1

Ms. Ruth Cornish
Director, Strategic Policy Branch
Ministry of Tourism and Recreation
10th Floor, 77 Bloor Street West
Toronto, Ontario
M7A 2R9

Ms. Carol E. Lonero
Economist - Regional Issues
Sectoral and Regional Policy Branch
Ministry of Treasury and Economics
4th Floor, Frost Building North
95 Grosvenor Street
Toronto, Ontario
M7A 1Y9

Mr. R. A. Brown
Director
Design and Development
Division-Transmission
Ontario Hydro
700 University Avenue (Bld. Code H9 A1)
Toronto, Ontario
M5G 1X6

Mr. Simon Llewellyn
Review Co-ordinator
Environment Canada - Ontario Region
25 St. Clair Avenue East, 7th Floor
Toronto, Ontario
M4T 1M2

Mr. Tom Dodds
Environmental Planning and Management
Lands, Revenues and Trust
Department of Northern Affairs, Canada
25 St. Clair Avenue East
Toronto, Ontario
M4T 1M2

Mr. P. Monture
Six Nations Land Research Office
Band Administration Building
R.R. #1
Ohsweken, Ontario
NOA 1MO

HIGHWAY 6 NEW
Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report)

| Agency | Comment Date | Comments | Resolution/Discussion |
|---|----------------------------|--|---|
| Agriculture & Food Citizenship & Culture | 24/07/87 D. Dunn | -concord with selection of alternative "A1" | -no changes required -response sent: /09/87 |
| | 06/09/87 P. Carruthers | -s.4.3.3 (contribution of heritage resources to recognition of Mount Hope as ESA) -s.4.3.4 (archaeological sites as heritage resources) -s.4.3.4.2 (archaeology significance and additional work) | -Mount Hope not an E.S.A. for the purposes of this assessment; heritage significance of Mount Hope is outlined in s.4.3.3 s.4.3.4 contains two subsections: historical & archaeological; no changes to text made -text changes to clarify significance and sensitivity; MHC archaeological investigations will continue along selected alignment to determine significance & mitigation as required |
| Community & Social Services | 12/06/87 D.J. Cornish | -Table 5.8.1 (Factors used ...) request for inclusion in table Table 6.4: request change in wording of archaeology section | -inclusion inappropriate; this table was presented to External Team members for comments during study as a basis for evaluation; no MCC concerns received during those discussions; no changes made to table -table altered to meet intent of request -response sent: 24/09/87 |
| | | -no specific concerns -requested additional information as available about social, public health, safety, displacement & interference with livelihood | -no additional studies planned for this assessment but any relevant additional information identified during detail design will be discussed with CS&S -no changes made to text; response to this effect sent: 26/06/87 |
| HIGHWAY 6 NEW Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report) | | | |
| Agency | Comment Date | Comments | Resolution/Discussion |
| Association of Conservation Grand River Conservation Authority Hamilton Region Conservation Authority | 07/-5/87 J.R. Powell | -no comments to offer | -no changes required -response sent: 8/06/87 |
| | 28/05/87 I. Kao | -no objections, subject to Seneca Creek crossing approval under O.Reg. 154/86 | -commitment to submit for approval recorded in Table 6.2 -response sent: 10/06/87 |
| | 16/07/87 R.W. Chrystian | -request opportunity to review drainage studies, Design & Construction reports for area between Hwy 403 & Book Road -request strengthening of storm water management commitments by adding appropriate text to: -s.4.2.6.1 ii (Hydrology) -Table 5.8.2 (Gen'l Env. Effects) -Part II, Table 4.1 (Description of Major Construction Items & Activities ...) | -commitment made in Table 6.4 -alterations made to text -alterations made to table -Table 4.1 outlines general effects associated with actual construction; change to table not appropriate as changes to volume & frequency of peak storm water flows into watercourses will be mostly effected with road completion -no changes required |
| | | -Fill & Construction permit commitments acceptable | -response sent: 24/09/87 |
| Niagara Peninsula Conservation | 24/07/87 A.M. Willmot | -no concerns; Authority's concerns have been addressed | -no changes required -response sent: /09/87 |

HIGHWAY 6 NEW
Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report)

| Agency | Comment Date | Comments | Resolution/Discussion |
|--|-----------------------------|---|--|
| Education | 20/05/87 S. Mitchell | -request to send pre-submission draft EAR to schoolboards in study area -request for summary of EAR to be sent to Haldimand Board of Education | -not appropriate to provide individual schoolboards with draft EARs during government agency review; schoolboards' participation provided for during public participation programme for study -brief summary of project status sent as courtesy 03/06/87, due to proximity of Seneca Unity School -no changes to text required; response sent 03/06/87 |
| Environment Land Use | 27/07/87 L. Stanley | -submission of Design & Construction Reports for review for MOE concerns -noise (numerous comments) | -commitment to review drainage/stream crossings, wells, private sewage systems made in revisions to EAR text, appendices -meeting held with L. Stanley & MOE staff to review comments & attain resolution of concerns: 01/09/87 |
| Environment E.A. Branch | 13/07/87 K. Underwood | -comments relating to EA Act subsection 5(3), readability & traceability of document, & requirements of Regulation 205 | -meeting held with K. Underwood to review comments & attain resolution of concerns 03/09/87 |
| Government Services | 03/06/87 R.M. Farewell | -no concerns | -no changes required -response sent: 15/06/87 |
| Health | 02/07/87 B.J. Blake | -no negative impacts | -no changes required -response sent: 13/07/87 |
| Haldimand-Norfolk Reg. Health Dept. | 03/06/87 D.C. Kittle | -concerns satisfied | -no changes required -response sent: /09/87 |
| Hamilton-Wentworth Reg. Health Unit | 21/07-87 D.A. Cunningham | -concerns satisfied | -no changes required -response sent: 24/09/87 |

HIGHWAY 6 NEW
Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report)

| Agency | Comment Date | Comments | Resolution/Discussion |
|---------------------------------|----------------------------|--|--|
| Housing | 16/07/87 Wm.M.C. Wilson | -no further attention warranted beyond that already given to housing/property issue | -no changes required -response sent: /09/87 |
| Industry, Trade & Technology | 15/05/87 J.R. Delaney | -project falls outside purview of IT&T; no further comments | -no changes required -response sent: 08/06/87 |
| Labour | 09/07/87 J. Hovenkamp | -will comment on project when officially requested to do so by MOE | -no changes required -response sent: /09/87 |
| Municipal Affairs | 22/05/87 R.R. Kennedy | -EA should have discussion about Mineral Aggregate Resources policy statement -include reference to proposed policy statements on Foodland Preservation & Floodplain Planning | -discussion provided about Mineral Aggregate Resources policy statement in EAR text -reference made to both proposed policy statements in EAR text |
| Native Affairs Directorate | 08/06/87 J.J. Clapp | -text error re: Haldimand-Norfolk official plan approval date -contact with Six Nations & New Credit Indian Bands for draft EAR comments requested | -correction made to text of EAR -response sent: 18/06/87 |
| Natural Resources | 26/06/87 A.S. Holder | -request recognition of Vegetation as ESI -request recognition of impacts to licensed gravel pit | -contact made with Six Nations Band throughout study but New Credit Band not in close proximity; New Credit Band contacted & sent draft EAR; see below -response sent: 08/09/87 -recognition of vegetation (woodlot & forest area) as ESI; text altered appropriately -text revised to recognize licensed gravel pit, loss of resource & potential use for construction -response sent: 24/09/87 |

HIGHWAY 6 NEW
Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report)

| Agency | Comment Date | Comments | Resolution/Discussion |
|--|--|--|---|
| Northern Affairs & Mines | 18/06/87 A. Garfin | -no significant adverse impact on mineral resources of area -supplementary geological & other resources mapping provided -Management Services no longer comments on EARs | -no changes required -response sent: 08/09/87 |
| Solicitor General Management Services L. Ceglar | 09/07/87 [*] R.R. Philippe | -no concerns with proposal (copy of internal correspondence to L. Ceglar provided) | -no changes required [*] discussion occurred by phone -response sent: /09/87 |
| Solicitor General O.P.P. | 08/06/87 C.F. Johnson | -request discussion of highway design and accident relationship | -revisions made to EAR to provide clarification to consideration of design and safety relationship -response sent 17/06/87 |
| Tourism & Recreation | 05/06/87 R.M. Cornish | -need to provide appropriate & adequate signage | -commitment made to investigate appropriate signage during detail design -response sent: 15/06/87 |
| Treasury & Economics | 08/07/87 [*] C.F. Lohrsto | -T&E does not respond through formal EA process | -no changes required [*] discussion occurred by phone -response sent: 15/07/87 |
| Ontario Hydro | 08/06/87 R.A. Brown | -Comments & concerns addressed -request clarification of wording in Summary of Existing & Future Utility Plants table, about hydro line crossing | -table revised to clarify meaning -response sent: 24/09/87 |
| Environment Canada | 24/07/87 S. Llewellyn | -no concerns or comments | -no changes required -response sent: /09/87 |

HIGHWAY 6 NEW
Summary of Review Comments (Pre-Submission Draft Environmental Assessment Report)

| Agency | Comment Date | Comments | Resolution/Discussion |
|------------------|----------------------------------|--|---|
| Northern Affairs | " | -(no response received; requests for response made by telephone & letter; assumed to have no concerns on basis of follow-up letter sent to Northern Affairs) | |
| Six Nations | 21/05/87 P. Monture | -concerns about archaeological site if alternative "C" selected -claims advisory issued for information purposes only | -alternative "C" not selected; no changes required |
| Six Nations | 26/05/87 C.T. Davis/Smith | -Six Nations Reserve located outside study area; heavy traffic problems will hopefully be addressed by undertaking | -no changes required -response sent: /09/87 |
| New Credit | /08/87 [*] W.G. King | -no comments during review of draft EAR | -sent draft EAR 18/06/87; no changes required (* discussion occurred by phone) |



Ontario

Ministry of
Agriculture
and Food

Ministère de
l'Agriculture et
de l'Alimentation

416/965-

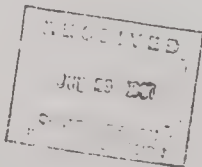
Legislative Buildings
Queen's Park
Toronto, Ontario

Hôtel du gouvernement
Queen's Park
Toronto (Ontario)

Foodland Preservation Branch

M7A 2B2

July 24, 1987



Mr. A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Central Region
Ministry of Transportation and
Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

Staff of the Ontario Ministry of Agriculture and Food have reviewed the above mentioned document in light of the Food Land Guidelines. The following comments are outlined as per your request.

Previous comments dated January 2, 1986 were submitted by our Ministry on the proposed alignment. In our letter it was stated that Alignment A was the preferred alternative because a designated right-of-way and the side and back lot lines could be followed for the majority of the alignment. However, it was noted that if the present restrictions in eliminating alignment A could not be overcome the Ministry would consider alignment A1 as an appropriate alternative.

...2/

In conducting our review of the pre-submission draft review, it was noted that the various restrictions could not be overcome. For example, some of these controls and constraints are due to the proximity of the following land uses; Hamilton Civic Airport, local cemeteries and several large viable farms in the area. The Ministry, therefore, concurs that the preferred route should be alignment A1.

Should you have questions with respect to the foregoing, please do not hesitate to contact Diane Horner of my staff at (416) 965-9433.

Yours truly,

DONALD DUNN
Director

c.c. Diane Horner, OMAF, Toronto
Raymond Valaitis, OMAF, Ancaster

a:hy6.dsh





Ontario

Ministry of
Citizenship
and Culture

Ministère des
Affaires civiques
et culturelles

77 Bloor Street West
Toronto Ontario
M7A 2R9

77 quest. rue Bloor
Toronto Ontario
M7A 2R9

Heritage Branch
Architecture & Heritage Planning
(416) 965-4961

Your File

Our File

August 6, 1987

Mr. A. Jay Nuttall
Environmental Planner
Environmental Unit, Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00 EA Draft Report

Thank you for the opportunity of reviewing the above report.

The attached sheet lists responses to the questions provided with your letter. It is recognized that this is a draft E.A. report and also that further work is being carried out currently on the archaeological resources.

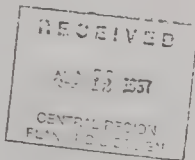
If you have any questions please do not hesitate to ask.

Yours sincerely,

Jean Samson

Peter Carruthers
E.A. Coordinator

PC/vc



Ministry of Citizenship and Culture - Heritage Branch
Comments on: Draft E.A. Report, Highway 6 New,
Hamilton to Caledonia

The fact that M.T.C. has carried out and continues to carry out heritage resource assessment and mitigation is commendable.

The following comments are related to the draft E.A. text by section members, page numbers in the text would be helpful.

4.3.3.

- The incorporation of heritage resources into the consideration of the visual or cultural landscape is a good example of how this information can be used. In this case it has resulted in the identification of Book Road and White Church road as Environmentally significant areas. The same would probably be said of Mount Hope as well.

4.3.4. - Heritage Resources

- It should be pointed out that archaeological sites are heritage resources as well.
- The study carried out by the M.T.C. Central Region Historical Planner on architectural heritage is both comprehensive and commendable.

4.3.4.2. - Archaeology

- It is recognized by this office that additional archaeological work is in the process of being carried out by M.T.C.
- presumably the incomplete nature of the archaeological work is the reason for the statement that, "Archaeology is not an Environmentally Significant Issue for the purposes of this study."
- since the full excavation, analysis, and reporting of certain categories of site would be quite expensive, the presence of a site in the preferred right of way might prove to be significant.

Table 5.8.1. - Factor used for the detailed assessment of Alternative Alignments

- archaeological sites should be incorporated into this type of table in the way that the Natural hamlet is in Table 5.9.2.

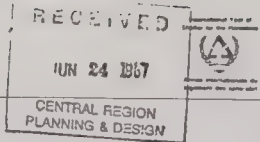
Table 6.4. - Summary of Commitments to Future Work

- the notation beside "archaeology" under "Future Work Proposed" should read "additional field surveys, documentation and mitigation of impact to be carried out prior to construction".



Ministry of
Community and
Social Services

Ministère des
Services sociaux
et communautaires



June 12, 1987

A.J. Nuttall, Environmental Planner
Planning and Design
Environment Unit
Central Region
5000 Young Street
Willowdale, Ontario
M2N 6E9

Regarding: Highway 6 new, Hamilton to Caledonia
W.P. #86-84-00
Environmental Assessment Report
Pre-submission Draft Review

Dear Sir:

We would like to thank you for the opportunity to review and provide comment on the Pre-submission Draft Review of the New Highway 6, from Hamilton to Caledonia. The draft appears to have initially addressed the environmental, cultural and socio-economic and nuisance factors.

We have reviewed this report with much interest. This development will have no direct impact on the current delivery of Social Services in that area, and, as such, we have no specific concerns to raise. Yet we continue to question the short term and long term impact on individuals such as farmers who will be directly affected.

Should additional information or concerns regarding the social, public health and safety factors, or issues of displacement and interference with livelihood arise, we would request that we be kept informed.

Yours very truly,

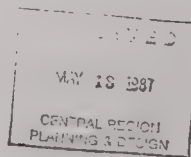
Donald J. Cornish
Area Manager

DJC/sjb

cc: Murray Hamilton
Trudy Battaglio

THE ASSOCIATION OF CONSERVATION AUTHORITIES OF ONTARIO

BOX 389 71 KING ROAD
KING CITY, ONTARIO L0G 1K0
TELEPHONE (416) 833 5023



May 7, 1987

Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation and Communications
Planning and Design, Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Sir:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

ACAO has no comments to offer concerning the above project. You may very well receive input from the three Conservation Authorities affected; Hamilton Region, Niagara Peninsula and Grand River.

Yours truly,

J. R. Powell
Executive Director

JRP:ep

cc: B. W. Vanderbrug
A. L. Burt
G. M. Coutts



Grand River Conservation Authority

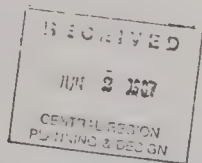
Administration Office
400 Clyde Road
Box 129 Cambridge Ontario
N1R 5W6
Telephone 621-2761
Area Code 519

May 28, 1987

Mr. A. Jay Nuttall,
Environmental Planner,
Planning & Design, Environmental Unit,
Central Region,
Ministry of Transportation & Communications,
5000 Yonge Street,
WILLOWDALE, Ontario.
M2N 6E9

Dear Mr. Nuttall:

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-Submission Draft Review



With reference to your letter of May 6th, the Grand River Conservation Authority has reviewed the above document and the following resolution was passed by our Executive Committee on May 22nd:

"THAT the Grand River Conservation Authority has no objections to the proposed Highway 6 New from Caledonia to Grand River watershed boundary, subject to final approval of the Seneca Creek crossing under the Authority's Fill, Construction and Alteration to Waterways Regulation (O.R. 154/86)."

We appreciate the opportunity to comment on this project.

Yours very truly,

J. Kao

Ilmar Kao,
Assistant General Manager,
Grand River Conservation Authority.

HAMILTON REGION CONSERVATION AUTHORITY



P.O. BOX 7099 - MINERAL SPRINGS ROAD
ANCASTER, ONTARIO L9G 3L3
Phone 525-2181 or 648-4427

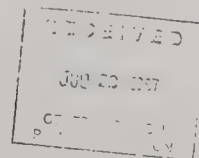
Page No. MTC #6 Hwy.

July 16, 1987

Mr. Jay Nuttall
Environmental Planner
Ministry of Transportation & Communications
Planning and Design Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00, Environmental Assessment Report
Presubmission Draft Review



The planning staff of the Hamilton Region Conservation Authority has reviewed the above noted draft document. By correspondence dated November 27, 1985, we provided comments regarding this project. Our concerns were strictly technical in nature and this has not changed, i.e. drainage, flooding and storm water management. We have therefore restricted our review to these matters, keeping in mind the questions contained in attachment #1 to your letter dated May 6th.

We find that our concern for on site flooding and erosion has been addressed in a satisfactory manner in the draft document. We agree that these matters can be addressed in detail at the final design stage. Accordingly, we request the opportunity to review drainage studies and design and construction reports for the section between Highway #403 and Book Road as they become available.

Based on our review of the document, we feel that our concern for storm water management with this project has not been-addressed in a satisfactory manner. Appendix B to Part 1 (summary of External Team responses) indicates that this matter will be addressed at the final design stage and we agree with this approach. However, we feel that the commitment of the Ministry of Transportation and Communications to this issue could be strengthened within the document by adding appropriate text to the following sections:

Mr. A. Jay Nuttall
July 16, 1987
Page 2

Part 1, Section 4.2.6.1 - Hydrology, Subsection 11 - Significance and Sensitivity

Table 5.8.2 - General Environmental Effects and Standard Mitigating Measures

Part 2, Table 4.1 - Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures.

For possible text, please refer to our previous correspondence dated November 27, 1985.

Permits pursuant to Ontario Regulation 617/86, the Fill and Construction Regulations of the Hamilton Region Conservation Authority are required for any work within or adjacent to the floodplain of Ancaster Creek. This requirement is noted in Part 1, Section 6.4 and Part 2, Section 10.1 satisfactory to Authority staff.

Finally, we note that our copy of the draft document contained unnumbered pages. It is incomprehensible that a document of this size could be circulated without numbered pages. Would you please ensure that all future circulations to this office are complete in this regard.

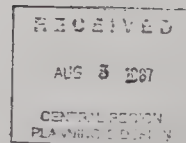
Should you have any questions, please contact K. Dakin, Authority staff.

Yours truly,

R.W. Chrystian
Director of Planning & Engineering

JKD:nb

July 24, 1987



Ministry of Transportation & Communications
Planning & Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Attention: Mr. J. Nuttall, Environmental Planner

Dear Mr. Nuttall:

Subject: Highway 6 Re-Alignment (Hamilton-Caledonia)
Environmental Assessment Report
(Pre-Submission Draft)

Authority staff have reviewed the report with respect to our previous comments and concerns on this matter and offer the following information.

- 1) Under Section 4.26 "Hydrology", the report outlines the sensitivity of the watercourses within the study area and the possible impacts of crossings and interceptions on area drainage. It is also stated that the riparian rights of landowners should be observed. These statements are consistent with our concerns regarding the proposal.
- 2) In Table 6.4 and the accompanying section, a commitment is made to future work which will involve a detailed drainage study prior to final construction plans. The study will review stream crossings, required permits and structural designs with the Conservation Authority.


We agree with undertaking the final plans at a future date, following discussions with other agencies.

- 3) Appendix B lists concerns expressed by the various agencies. Our comments and conditions of our November 12/85 letter to J. P. Horton of Dillon are listed in the table. The discussions corresponding to our conditions suggests that they are acceptable but the final aspects will be determined at the detailed and final design stages of the project.

Based on the above, we do not have any concerns with the Environmental Assessment Report and are pleased that the Authority's concerns have been addressed. We look forward to discussing this proposal with your agency regarding the preparation of the final designs.

Should you have any questions or wish to discuss this matter, please contact the undersigned.

Yours truly


Anne M. Willmot
Resources Planner

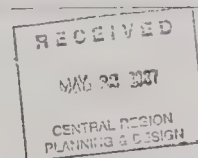
AMW/mk



Ontario

Ministry
of
Education

Ministère
de
l'Éducation



May 20, 1987

Mr. A.J. Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Central Region
5,000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Environmental Assessment Report
Pre-submission Draft of Highway 6 (New)
Hamilton to Caledonia, W.P. 36-84-00

Thankyou for sending this office the above captioned draft report. The major concern of the Ministry of Education with regard to environmental assessments is to be fully assured that the school boards within whose jurisdiction the project falls are being advised and consulted on a continuing basis.

We understand the Haldimand Board of Education was consulted regarding the impact of the route of the new Highway 6 on the Seneca Unity School, R.R. #1, Caledonia. I have spoken to Mr. G.S. Kuckyt, Business Administrator and Treasurer of Haldimand Board of Education and he would like to receive a summary of the report to date.

Please send Mr. Kuckyt and the following school boards up-to-date information on the status and design of the proposed Highway 6 (new) route.

Thankyou.

Yours truly,



Steven Mitchell
Architect

21st Floor
Mowat Block
Queen's Park
Toronto, Ontario
M7A 1L2

etage
Édifice Mowat
Queen's Park
Toronto (Ontario)
M7A 1L2



Haldimand Board of Education
P.O. Box 2,000
Cayuga, Ontario
N0A 1E0
Attn: Mr. G.S. Kuckyt
Business Administrator and Treasurer

Haldimand-Norfolk R.C.S.S. Board
P.O. Box 278
Simcoe, Ontario
N3Y 4L1
Attn: Mr. H.V. Thournout
Superintendent of Business Affairs and Treasurer

Wentworth County Board of Education
Memorial Building
357 Wilson Street East
Ancaster, Ontario
L9G 4B7
Attn: Mr. D. Webb
Superintendent of Business and Finance and Treasurer

Hamilton Board of Education
P.O. Box 558
100 Main Street West
Hamilton, Ontario
L8N 3L1
Attn: Mr. J. Penner
Deputy Business Administrator

Hamilton-Wentworth R.C.S.S. Board
P.O. Box 2012
90 Mulberry Street
Hamilton, Ontario
L8N 3R9
Attn: Mr. S. Simon
Superintendent of Business Administration

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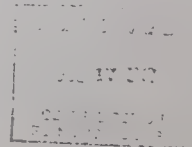
323-4588

July 13, 1987

Mr. A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Central Region
Ministry of Transportation
and Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Comments of the Pre-Submission Draft EA



Thank you for sending a copy of the above draft EA for my review. I've organized my comments into two main categories:

- 1) comments dealing with the essential elements of subsection 5(3) of the EA Act, and
- 2) comments dealing with such factors as the readability and traceability of the document.

1. Subsection 5(3)

Clause 5(3)(b) of the EA Act requires the proponent to describe the undertaking. From the description of the undertaking provided in Section 1.2 of the report it is not clear that the undertaking is to be constructed in stages.

Later in the report, in section 2.3.2.5, staging the construction of Highway 6 New is mentioned, however "how" the construction will be staged is not indicated. Will the highway's length or width, or both be built in stages? Elaboration on these points would provide a more accurate description of the undertaking.



Clause 5(3)(b) also requires a description of the alternatives to the undertaking and alternative methods of carrying out the undertaking. Earlier comments made by the EA Branch on the Preliminary Design Report addressed the description of alternatives to the undertaking. As those comments mentioned, alternatives to an undertaking must be fundamentally different from the selected undertaking.

In Chapter 5, Identification and Evaluation of Alternatives, subsection 5.3.4 refers to the upgrading of existing facilities as an alternative to the undertaking. However, the upgrading of existing facilities is not fundamentally different from the chosen undertaking, construction of Highway 6. Modally they are the same. Air transit and rail transit are examples of two modally different alternatives to the undertaking which is road transit. The upgrading of existing facilities is an alternative method of carrying out the undertaking.

Clause 5(3)(c) requires a description of existing and future conditions in conjunction with the undertaking, alternatives to the undertaking and alternative methods of carrying out the undertaking. Chapter 4, Existing and Future Conditions, adequately describes existing conditions within the study area but in some instances such as subsections 4.3.6 and 4.4 does not describe future conditions. In these instances a description of future conditions should be included.

Further this clause requires the proponent describe the action necessary to "prevent, change, mitigate or remedy" the environmental effects of the undertaking and alternatives. Evaluation of the undertaking and each alternative should be based on the net environmental effects which are expected to persist after mitigation has been carried out. Be sure that the final report includes discussion of all of these elements.

2. Readability and Traceability of the EA Document

When reviewing the draft EA for Highway 6 New Hamilton to Caledonia, I noted that some sections require further clarification. I have listed these sections sequentially below.

2.2.2 Haldimand-Norfolk Region

Problem area (iii) sited in this subsection refers to operational problems on the Caledonia By-pass. It is unclear from the discussion how the project will alleviate these problems. Clarification of the relationship of the project to the operational problems on the Caledonia By-pass would avoid any confusion and strengthen the need for the project.

4.2.5 Wildlife

In part (iii) of this subsection entitled Significance and Sensitivity the report states, "This adjacent forest cover is more significant as a potential wildlife habitat. The other scattered ponds serving as waterfowl nesting and staging areas are of a lesser importance." Further the report states that "it is recognized that the most sensitive period for all wildlife populations would generally extend from April to August." The relationship of these observations to the project is unclear.

Also with regard to this subsection, I noted that Appendix C, sub-appendix A provides a listing of special interest groups and members of the public receiving direct project notification. Included on this list are naturalist clubs that were contacted during PSC. It would be useful to reference these clubs individually or reference the appendix in which they appear. This would also increase the traceability of this subsection.

4.2.6.3 Fisheries and Aquatic Habitat

In part (ii), General Description, of this subsection the report states that "the water quality appeared to be fair." This statement is noncommittal and unclear. A firm determination of water quality would alleviate this problem.

4.3.4 Heritage Resources - 4.3.4.1 Historical

Part (iii) of this subsection describes the community of Mount Hope and the triangle comprising Concession VIII, Ancaster, as being significant and sensitive. However part (iv), Identified Environmentally Significant Areas, does not discuss these areas. The inconsistency between these parts is confusing. The status of these areas in terms of their significance and sensitivity needs clarification to avoid misinterpretation.

4.3.4.2 Archaeological

Part (iv) of this subsection states that, "Archaeology is not an Environmentally Significant Issue for the purposes of this Study". However, part (iii) of the same subsection states, "A determination of the significance of the findings must await further site investigation and analysis." Parts (iii) and (iv) are contradictory and need further explanation to prevent confusion.

4.4 Transportation Facilities

Discussion in this subsection makes reference to Highway 6 but does not specify whether reference is being made to existing Highway 6 or new Highway 6. Elsewhere in the report it is clearly indicated which Highway 6 is being discussed. To maintain consistency and avoid confusion this subsection should indicate if it is Highway 6 existing or new which is the subject of discussion.

4.4.1 Provincial Highways and Municipal Roadways

This subsection discusses traffic accident rates for existing Highway 6. From the discussion presented it appears that traffic accident rates on existing Highway 6 are used as an important justification for the project. This is acceptable, however, this intent should be clearly stated.

5.9.2 Alternative Alignments A, B, and C

It appears that parts of subsections 5.9.2 and 5.9.3 have been printed out of sequence.

6.2.7 Airport Road Connection to Glancaster Road

This subsection states that this "interchange requires the removal of some woodlot area." It would be helpful to know who owns this woodlot.

6.2.13 Staging

This subsection should include the expected time-frame for staging and completion of this project.

6.3.1 Designation Environmentally Sensitive Areas

Some discussion is needed in this subsection to clarify the relationship between the environmentally sensitive areas identified in this subsection and identified earlier in the study.

6.3.2 Noise

This subsection discusses the feasibility of noise mitigation in the form of barrier walls. Were other forms of mitigation, such as the planting of dense-leaf tree species considered? If so, these should be discussed.

I also observed that a number of statements concerning growth, use, etc., were made without referencing the statistical data or reports upon which they are based. Including this information will help to increase both the credibility of the statement and the traceability of the study. Such referencing should appear in Sections 2.2.3, 2.3.1 Objectives 1, 2, and 3, 2.3.2.4, and 4.3.2 (iii).

Further the readability of the EA document and understanding of the rationale behind the undertaking would be improved if subsection 2.4 Background, appeared earlier in the report.

NEW ONTARIO REGULATION 205

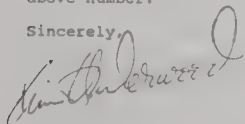
As you are probably aware, Regulation 293 under the EA Act was recently replaced by Regulation 205. Clause 2(1)(a) of Regulation 205 requires "a brief summary of the environmental assessment organized in accordance with matters set out in subsection 5(3) of the Act;" While the summary provided in the draft EA provides a brief synopsis of potential effects and mitigating measures it does not summarize the advantages and disadvantages of the undertaking, as required in subclause 5(3)(d) of the Act. A brief summary of this subclause should be included.

Just as a reminder, I would like to mention that sections 1(d), 2-2 and 2-3 of Regulation 205 requires the proponent to submit two unbound maps showing the location of the undertaking. I trust these will be submitted with the formal EA.

As a final note, I would like to mention that I found the use of tables and matrices to summarize information very helpful.

I trust these comments will be of use when preparing the final EA document. I apologize for their lateness and any inconvenience it has caused you. I tried to be rigorous and critical in my review of this draft so that any potential problem areas could be corrected before submission of the formal EA. If you would like clarification of these comments please do not hesitate to call me at the above number.

Sincerely,



Kim Underwood
Review Coordinator
Environmental Assessment Branch

cc: M. McLeod
EA File TCCE 02 Hwy. 6 New Ancaster to
Caledonia

KU/jm



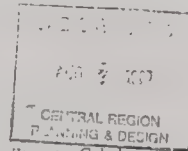
Ministry of the Environment
Ministère de l'Environnement

July 27, 1987

Mr. A. Jay Nuttal
Environmental Planner
Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale
M2N 6E9

Dear Mr. Nuttal:

RE: Highway 6 New, Hamilton to Caledonia
Environmental Assessment Report
Pre-submission Draft Review



Staff of the Ministry of the Environment have reviewed the above mentioned report. The following comments are based on our review of the document with regard to information requirements of a formal submission.

Drainage/Stream Crossings:

MOE notes that all design and construction reports will be submitted to us a minimum of 30 days prior to construction. Our review of these reports should be sufficient to address any concerns we may have with respect to drainage/stream crossings, wells and private sewage systems.

Noise:

1. Route Location

MOE acknowledges the importance given to noise in the generation and evaluation of alternative alignments for the proposed highway 6 (new). We also acknowledge that the methodology and procedures used in the evaluation process were of sufficient detail to allow for a fairly accurate indication of the merits of each alternative. MOE has some concerns, however, with the lack of information on certain aspects of the route location study.

Information of Value to
Ministry of the Environment



Environment Canada
Environnement Canada

135 St. Clair Avenue West
Suite 100
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M4V 1P5

135 Avenue St. Clair Ouest
Bureau 100
Toronto (Ontario)
M4V 1P5

A) MOE recommends that in section 4.3.5, the results of the on-site noise measurements conducted for representative locations within the study area be included to substantiate the correlation between the actual traffic sound levels and those determined through the calculations employed in the analysis; and the validity of the assumption made in the analysis that the "typical" Leq (24 h) sound levels in rural locations within the study area are about 45 dBA.

The results of the on-site measurements should be shown in a table that includes for each measurement the date/time period of the measurement, the recorded sound level (Leq) and any other information such as equipment used and weather conditions to substantiate the validity of the measurements.

Section 4.3.5 should also identify, in addition to existing noise sensitive developments, the locations of any draft approved developments (noise sensitive) adjacent to the recommended alignment. This should include the identification of any noise related conditions of draft approval for these developments to ensure that noise mitigation has or will be considered for these locations.

B) MOE recommends that the "Route Planning Noise Evaluation" Report in Appendix H include a map showing the alternative alignments for the highway which were subject to detailed evaluation and a table containing the traffic data used in the study. This table should include for each roadway used in the analysis: the total traffic volumes, percent trucks and posted speed limit for existing and future conditions. (Year and type of average daily traffic (AADT/SADT) should be indicated).

2. Recommended Route

A) MOE recommends that table 6.1 indicate the number of residences which will experience increases in sound levels greater than 5 dBA rather than sound levels greater than 55 dBA, Leq(24H).

B) MOE recommends the following additions to section 6.3.2 to allow for a more comprehensive noise evaluation:

- i) explain in detail why 1996 traffic conditions and not those present ten years after completion of the highway were used in the analysis; and
- ii) explain why AADT and not SADT volumes were employed.

To further substantiate the validity of the noise impact determined in the study the EA should indicate the approximate differences in the noise impacts which would occur if SADT traffic conditions 10 years after completion of the highway were used (a reasonable worst case scenario should be constructed).

C) MOE recommends that the report contain noise level tables summarizing the noise impacts within sensitive developments (existing and draft approved) adjacent to the proposed highway. The table should provide noise level data on at least those receivers which will experience increases in sound levels of 5 dBA or more.

The table should show for each receiver (cross-referenced as to location on a route plan):

- i) existing sound level
- ii) future sound level ("do nothing" option)
- iii) future sound level with highway (unattenuated)
- iv) proposed mitigation measure(s)
- v) improvement (dB) due to mitigation
- vi) future sound level with highway (attenuated)
- vii) change in sound level due to highway (vi-ii)

Type (AADT/SADT) and year of existing/future traffic conditions should be indicated. The receivers referred to in the noise level tables could be shown on the Route Plans provided in Appendix A of the Preliminary Design Report. The quality of the plans must be improved so that all noise sensitive locations referred to by these receivers are clearly visible.

3. Mitigation

The MTC/MOE Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments, states that MTC will increase documentation with respect to the feasibility of all potential mitigation measures within the right-of-way. MOE therefore recommends that:

i) where noise control measures are proposed at a particular location, document the measure(s) which will be applied and indicate its effectiveness (dB). If the objective sound level will not be achieved give reasons why further measures were not proposed;

ii) where the noise impact at a sensitive location will exceed 5 dBA and no control measures are proposed, document the measures which were considered and provide reasons why none will be applied. Reasons will include such things as cost, effectiveness and technical considerations.

4. Commitment to Future Work

MOE recommends that Table 6.4 state that provisions will be made for the investigation of additional opportunities for noise control at all sensitive locations along the highway should opportunities arise during the final design of the facility; and clearly indicate the location(s) along the highway where noise barriers will be further evaluated.

5. Construction Noise

MOE recommends that section 6.3.2 include a commitment to follow the procedures outlined in the MTC/MOE noise protocol for construction noise. The document does not indicate that there will be any blasting, however, in case there is a need for blasting a statement should be included in the document requiring that the proponent/contractor monitor blasting operations for noise and vibration and perform pre-blast surveys.

6. General Comments

Certain sections of the document are out of sequence (e.g. section 5.4.3 and 45.4.2). In table 6.2 sections of highway 6 (new) are out of sequence. Also in table 6.2, the Chippewa Road to White Church Road Section gives no indication of the number of residences adjacent to White Church Road which will experience noise level increases of 5 dBA or more, or of the proposed mitigation measures (if any) in the White Church Road area.

In Appendix H the title of table 1 should read "Number of residences experiencing greater than 5 dBA increase and greater than 55 dBA". In Report W86-204, No. 2 (Rev. 2) figures 1-7 (road dimensions/elevations) are referenced and should be included in the document. This report should also indicate whether the noise measurements referred to in section 2.1 are measurements in addition to those performed in the route location state. If they are additional measurements then they should be included in the document.

The report should also elaborate on the location of each receiver behind the residence, school or church as stated in section 2.4, including an explanation of why this location was selected and whether shielding by the building structure was taken into account in the calculation of the sound levels.

Finally, due to the number of deficiencies in the report with respect to noise, MOE recommends that you resubmit the sections on noise prior to the formal presentation of the EA. If you have any questions on the noise comments please contact Roman Krawczyniuk, Noise Assessment Unit, at 323-4465.


Elizabeth Stanley

cc. R. Krawczyniuk, Noise Assessment Unit
K. Underwood, Environmental Assessment Branch



Ministry of
Government
Services

Realty
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M5G 2E5

Ministère des
Services
gouvernementaux

Groupe des
biens immobiliers

Area Code 416
Telephone 585-6741

LAND DEVELOPMENT BRANCH
16TH FLOOR

June 3, 1987

Mr. A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

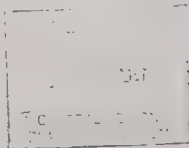
Thank you for the opportunity to review the report noted
above.

The Ministry of Government Services does not have any
concerns to register in this matter.

Yours truly,

R.M. Farewell
Planner

RMF:kml



Ministry
of
Health

Ministère
de
la Santé

(416) 963-2229

Fifth Floor
15 Overlea Blvd.,
Toronto, Ontario
M4H 1A9

July 2, 1987

Mr. A. J. Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Central Region
Ministry of Transportation
and Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall,

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

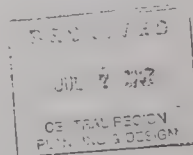
The above-noted report, forwarded to our Ministry under
the date May 6, 1987, has been reviewed by a member of
our Public Health Branch.

Mr. D. J. Porter, the Senior Consultant for our Public
Health Inspection Service has been in contact with you
to discuss certain aspects of the proposal. I understand
that you have already forwarded copies of the report to
the Medical Officers of Health for Haldimand-Norfolk
Regional Health Unit and Hamilton-Wentworth Regional
Health Unit requesting comments on health-related issues
that may be of concern.

With the possible exception of the comments that may be
made by the Medical Officers of Health for the areas
concerned, the report does not appear to present any
negative impact on the other programs and policies of
our Ministry.

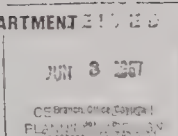
Yours very truly,

Barbara J. Blake, M.D., D.P.H.
Director
Public Health Branch



HALDIMAND-NORFOLK REGIONAL HEALTH DEPARTMENT

HEAD OFFICE
P.O. Box 247, 365 West St., Simcoe, Ontario N3Y 4L1
Telephone (519) 426-6170



(416) 772-3313

Dr. D.C. Kittle, M.D., M. Comm. H.,
Director and Medical Officer of Health

June 3rd, 1987.

Mr. A. Jay Nuttall,
Environmental Planner,
Ministry of Transportation & Communications,
Planning & Design Environmental Unit,
Central Region,
5000 Yonge Street,
Willowdale, Ontario.
M2N 6E9

Dear Sir:

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

The pre-submission draft has been reviewed as requested. In regards to the seven questions of attachment No. 1 to the pre-submission draft review we have no specific comments either pro or con. It appears that the existing document has paid attention to our previous comments regarding our concerns as to the relocation of existing private sewage disposal systems and private water supplies etc.

More specifically the answer to question No. 1 is simply - yes. For numbers 2 thru 6 the answer is also - yes. In regards to No. 7 the role which our agency played in the pre-submission consultation was review of the information and data collected as well as specific comments directed at those environmental issues of most concern - namely private water supplies and private sewage disposal systems. In regards to this we are satisfied that our comments and/or recommendations have been adequately reviewed and dealt with in this pre-submission draft of the Environmental Assessment Report.

Trusting the above information is what you require.

Yours truly,

[Signature]
Dr. D.C. Kittle, M.D., M. Comm. H.,
Director and Medical Officer of Health

MMD:va



THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Health Services
74 Hughson Street South
Hamilton, Ontario

521-4812

Mailing Address
P.O. Box 897
Hamilton, Ontario
L8N 3P6

July 21, 1987

Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation and Communications
Central Region
5000 Yonge Street
WILLOWDALE, Ontario
M2N 6E9

Dear Mr. Nuttall:

RE: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-Submission Draft Review

As requested, we have reviewed the above draft and make the following recommendations:

- Where dwellings on wells and septic tank systems are removed, septic tanks must be pumped out and filled. Also, wells must be filled according to Ministry of Environment guidelines.
- Any septic tank systems damaged or having to be relocated, must be repaired or relocated according to Ministry of Environment regulations.
- Surface drainage from the highway and relocation of streams, etc., is to be handled in a manner not to effect area residents' wells or septic tank systems.
- Cemetery relocations must be according to the Cemeteries Act, Ministry of Consumers and Commercial Relations.

Yours truly,

[Signature]
Dr. A. L. Cunningham, M.D., D.P.H.,
D.T.M.H., (London)
Medical Officer of Health
ATC:SM:dm



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LAND DEVELOPMENT BRANCH

July 16, 1987

Ministry of Transportation and Communication
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

ATTN: Mr. A.J. Nuttall
Environmental Planner

Dear Mr. Nuttall:

RE: Highway 6 New WP 36-84-00
Draft Environmental Assessment Pre-Submission

On behalf of the Ministry of Housing, it is my opinion based on Section 6.3.7 of the above report that the impact on housing by the proposed undertaking will not warrant any further attention than that which M.T.C. is already giving to the housing-property issue.

Please find enclosed the report you sent to me.

Yours truly,

Wm. M.C. Wilson
Environment Coordinator
Land Development Branch

/mll

Attachment

cc: Mr. S. Goetz-Gadon



Ontario

Ministry of
Industry, Trade
and Technology

May 15, 1987

Province of Ontario
Hearst Block
Queen's Park
Toronto, Ontario
Canada M7A 2E1

Cable Address:
Tradin-Toronto
Telex: 06219786

Memorandum to: Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation and
Communications.

From: Mr. J. R. Delaney
Manager
Plant Location and
Municipal Liaison.

Subject: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00

This project falls outside the purview of this Ministry, and since we cannot provide any technical input, we will be making no further comments. We are returning the documents to you for your use.

J. R. Delaney.



Ontario
Ministry of
Labour

Ministère
du Travail
de l'Ontario

Occupational
Health and Safety
Division

Division de la santé
et de la sécurité du
travail

400 University Ave
Toronto, Ontario
M7A 1T7

July 9, 1987

Mr. A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Ministry of Transportation
and Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

Thank you very much for sending us the draft Environmental Assessment for the above project. As mentioned to you on the phone yesterday, we will be commenting on this project when we receive an official request to do so from the Ministry of the Environment.

As also mentioned to you, I am returning the Environmental Assessment Report to you.

Yours truly,

Jeanne Hovenkamp

Jeanne Hovenkamp
Executive Assistant

Attachment

JH:b



Ontario

Ministry of
Municipal
Affairs

Ministère des
Affaires
municipales

Office of Local Planning Policy
777 Bay Street, 13th floor
Toronto, Ontario
M5G 2E5

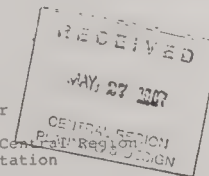
585-6228

May 22, 1987

MEMORANDUM TO: A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit, Central Region
Ministry of Transportation
and Communications

FROM: Ron Kennedy, MCIP
Senior Planner

RE: Highway 6 New (Hamilton to Caledonia)
Draft Environmental Assessment Report
W.P. 86-84-00



As requested in your May 6th letter, we have reviewed the draft environmental assessment and conclude that we have no substantial comments to offer. However, there are several minor comments which we have for your consideration.

The Planning Act provides for the issuance of Cabinet-approved policy statements on matters of Provincial interest which impact on municipal land use planning. To date the only statement which has received Cabinet approval is the Mineral Aggregate Resources statement; given the Planning Act requirement that once a policy statement is in place, all Ministries as well as municipalities are to have regard to it when conducting planning activities, the environmental assessment should include a discussion of the extent to which the statement was considered in the planning of this undertaking.

Similarly, two proposed policy statements have been released for public comment: Foodland Preservation and Flood Plain Planning. Although these have not yet been approved by Cabinet, their release has received Cabinet endorsement. Accordingly, where it is appropriate, some reference to these statements should also be included in the assessment.

As a very minor comment, section 4.3.2 states that the official plan for the Regional Municipality of Haldimand-Norfolk was approved in August 1983. In fact, not all of the plan is in effect, as there is still one portion of the plan whose approval has been deferred by this Ministry. This should be corrected in the text of the assessment.

R. Kennedy
Ron Kennedy



Ontario

Ontario
Native Affairs
Directorate

Direction générale des
affaires autochtones
de l'Ontario

June 8, 1987

Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation & Communications
Planning and Design Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario M2N 6E9

Dear Mr. Nuttall:

Thank you for your letter of May 6, 1987 and the copy of the Environmental Assessment Report, Pre-submission Draft Review entitled "Highway 6 New, Hamilton to Caledonia W.P. 36-84-00".

I have reviewed the above-noted document and have the following comments. The above Pre-submission Draft Review does not indicate that the Mississaugas of the New Credit Indian Band or the Six Nations of the Grand River Indian Band were contacted regarding this proposal. Both of the Indian Reserves occupied by these Indian Bands are situated in close proximity to the proposed route.

If you have not already done so, then I would encourage you to contact these Indian Bands (and send them a copy of the Environmental Assessment report) in order that they may provide you with their views regarding the impact that the proposed route will have on their communities.

Yours truly,

J.J. Clapp

J.J. Clapp
Executive Co-ordinator

cc: L.G. Ugarenko
B. Ward
P. Shaver
H.A. McNeely
L. Dutchak
P. Hodgins

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18 King Street East
3rd Floor
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3e étage
Toronto, Ontario
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Ministry of
Natural
Resources

June 26, 1987

Environmental Unit
Ministry of Transportation
and Communications
5000 Yonge St.
Willowdale, Ontario
M2N 6E9

Attention: A. Jay Nuttall
Environmental Planner

Dear Mr. Nuttall:

SUBJECT: Pre-submission Draft Review
Environmental Assessment Report
Highway 6 New, Hamilton to Caledonia

Staff from the Cambridge and Niagara District have reviewed the draft environmental assessment report and offer the following comments for your consideration. The attached responds to the standard questions used to evaluate an E.A. if it contains all the components of sub-section 5(3) of the E.A. Act.

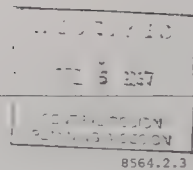
On the basis of our review of this document and pre-submission consultation, the Ministry finds the undertaking acceptable, subject to modifications to the draft document as follows:

- 1) recognition that vegetation is a significant environmental issue.
- 2) recognition of the impacts of the undertaking on a licenced sand and gravel operation, consistent with the Mineral Aggregate Resources Policy Statement.

These modifications are necessary to ensure adequate coverage of the Ministry's resource interests, and in our opinion will make the document more acceptable to the Ministry.

The proponent has clearly indicated how compliance reporting regarding commitments to our Ministry will be fulfilled. I am satisfied that consultation with respect to the Ministry's resource interests will continue through implementation of the undertaking.

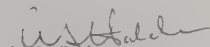
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Page 2
Ministry of Transportation
and Communications

Questions regarding these comments should be directed to Ted Harvey
at the Cambridge District office (519) 658-9355 or Fred Johnson at
this office (416) 883-3229.

Yours truly,


A. S. Holder
Regional Director
Central Region
10670 Yonge Street
Richmond Hill, Ontario
L4C 3C9

Telephone: (416) 883-3256

APH:js

cc: District Manager - MNR Cambridge
District Manager - MNR Niagara

Environmental Assessment Report
Pre-Submission Draft Review
Highway 6 New, Hamilton to Caledonia

Comments of the Ministry of Natural Resources

1. Are the data, analyses and conclusions in the E.A.
satisfactory?

In general, in the context of the Ministry's mandate, the E.A.
covers the range of issues at an appropriate level of detail and in
a comprehensive manner. In general, methods and techniques to
predict environmental impacts follow generally accepted processes.

The Ministry observes two areas which are deficient in the
identification of significant impacts on areas of interest to the
Ministry of Natural Resources.

1. Vegetation is not identified as an 'environmentally significant
issue' in the draft document (Section 4.2.4). In terms of the
criteria for the identification of 'significant issues' (Section
3.3) woodlots (vegetation) in this area are considered a
significant provincial resource by the Ministry of Natural
Resources, thereby satisfying criterion 1. Woodlots contribute
significantly to the achievement of Ministry targets for Forestry
and wildlife as defined in the Cambridge and Niagara District Land
Use Guidelines. This issue was raised by MNR staff at external
team meetings and in correspondence from MNR, thereby satisfying
criterion 2.

In response to concerns raised by MNR staff, forested areas, among
other natural environmental factors, were used for the detailed
assessment of alternative alignments (Table 5.8.1), and
subsequently, modifications were made to the preferred alignment to
reduce fragmentation of woodlots. Nevertheless, the total loss of
high quality woodlots is 30 ha (Table 6.1), a substantial loss and
one which the Ministry considers to be a significant environmental
impact.

2. The E.A. does not recognize the impact of the Highway on an
existing licenced gravel pit. The preferred alignment will result
in the acquisition of a portion of a property containing a licenced
sand resource which is available to meet local and regional
aggregate demand. Under the recently approved Mineral Aggregate
Resources Policy Statement, it is a policy of the Province of
Ontario that:

1.1 All land use planning and resource management agencies within
the province have regard for the implications of their actions
on the availability of mineral aggregate resources to meet
future local, regional and provincial needs.



Ministry of
Northern Development
and Mines

1937 06 15

MEMORANDUM TO: Dr. A.E. Pitts
Regional Manager
Southern Ontario
Mines and Minerals Division

SUBJECT: Environmental Assessment Report - Highway 6 New

As requested, I reviewed subject draft report and conclude that construction of any of the proposed routes should have no significant adverse impact on the mineral resources of the area.

Domtar Construction Materials Limited, according to previous comments, does not foresee any significant detrimental effect from the proposed highway construction on their gypsum mining and processing operations at Caledonia.

The Central Region office of the Ministry of Natural Resources responded previously regarding the impact of the proposed Highway 403 interchange on sand and gravel pit operations in the area.

To add new information, promote the good use of and help minimize any adverse impact of the mineral resources in the area on proposed highway construction, I have attached the following maps that may be of interest to responsible staff of the Ministry of Transportation and Communications:

- 1) Quaternary Geology of the Grimsby Area (distribution of surficial geological materials; revised): I have detailed geological material information along proposed routes available, if required;
- 2) Drift Thickness of the Grimsby Area (unpublished map; confidential) - thickness of glacial 'soils' in the area;
- 3) Bedrock Topography of the Grimsby Area;
- 4) Bedrock Geology of the Grimsby Area;
- 5) Aggregate Resources Maps;

By not recognizing the loss of available resources (as contained on the property licenced to David B. Shaver, at part lot 45, concession 3, Ancaster) the Ministry fails to see how the E.A. has had adequate regard for a policy of the province. This potential impact was raised by MNR during external team meetings and in correspondence. Further, the Ministry identified the potential loss of a mineral aggregate resource of secondary significance and observed in correspondence that its loss would not, in our opinion affect the long term availability of the resource. However, this resource loss has not been recognized in the E.A.

2. Do you feel the proponent has chosen an appropriate range of alternatives to investigate in the E.A.?

Yes.

3. Are the monitoring and contingency plans specified by the proponent in the E.A. adequate?

Yes.

4. Is the way in which the proponent intends to implement the undertaking satisfactory?

Yes.

5. Has the proponent clearly indicated how compliance reporting regarding commitments in the E.A. related to your mandate will be fulfilled?

Yes. Opportunities for review of detailed designs for stream crossings and for measures to minimize impact on waterfowl nesting will be provided to the Ministry of Natural Resources. Appendix B to Part II contains additional soils information, as requested by our Ministry. Our original concern related to the possibility of hazards due to weakened shales. We are satisfied that the testing was sufficient to have identified this potential problem, if it existed.

6. Are you satisfied with the importance, relative to other aspects of the environment, given to your interests in the selection of the undertaking?

See discussion under question 1. above.

7. What role did your agency play during pre-submission consultation?

Ministry of Natural Resources staff participated throughout the process as technical resource specialists as a member of the external study team, and by providing input to selection criteria and analysis of route alternatives. In general the Ministry is satisfied with its role in the process.

Page 2
Dr. Tony Pitts
1987 06 15

- 6) Location of known oil and gas wells in the area; it is advisable to contact the Petroleum Resources Section of the Ministry of Natural Resources for further information;
- 7) Oil and Gas Pools and Pipelines Map.

Susan Brown

Bern H. Feenstra
Resident Geologist
Southwest District
Ministry of Northern Development and Mines
Box 5463
659 Exeter Rd.
London, Ontario
N6A 4L6

Encls.

BHF/sb



Ontario Provincial Police

Ministry of the Solicitor General

90 Harbour Street
Toronto, Ontario
M7A 2S1
Telephone

965-2542

08 Jun 87

RECEIVED

JUN 10 1987

CENTRAL REGION

Mr. J. Jay Nuttall
Planning and Design Environment Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-Submission Draft Review

Dear Mr. Nuttall:

The above draft has been reviewed by Constable A. Gray of this Branch. As stated in our memorandum of 25 Mar 85, our concern respecting highway design is that of public safety, in particular, accident prevention. To this end, we requested discussion concerning predicted accident rates and highway design. We feel that accident rates should be forecast in much the same way as traffic volumes, and related to each of the design options. Although your draft proposal includes information on accident rates around the Hamilton Airport, it does not contain any discussion on the impact of the various design options or alternatives, vis a vis accident rates.

The sections dealing with accident data indicate rates slightly above (1.6/mvk), not lower (as you state) than the provincial average, with 30-50% of the accidents being related to intersections or private drives. One would assume that the two-lane arterial stage would reduce the overall number of accidents by reducing the number of intersections and private drive access. However, what is the impact of at-grade intersections at proposed interchange sights? Increased volumes, with a greater concentration of truck traffic, may create problems, especially



with the interim design. Accident rates for signalized intersections of the Hamilton Expressway in Guelph are significantly above the provincial average.

We believe your final submission should discuss these impacts and consider them in your design and staging alternatives.

Yours truly,

C. F. Johnson
C. F. Johnson, A/Superintendent
A/Director
Policy and Planning Branch

AG/eyk

cc: Ms. Lynn Ceglar
Human Resources Services Branch

Mr. R. Philippe
Ontario Fire Marshal

Ministry of the
Solicitor
General

Office of the
Fire
Marshal

Public
Safety
Division

7 Overlea Blvd., 3rd Floor
Toronto, Ontario
M4H 1A8

June 4, 1987

Telephone
965-4851

MEMORANDUM TO:

Lynn Ceglar
Director
Human Resources Services Branch
Ministry of the Solicitor General

RE:

Pre-Submission Draft Review -
Highway 6-New Hamilton to Caledonia
E. A. Report - W.P. 86-84-00

We have reviewed the draft Environmental Assessment produced by the Ministry of Transportation and Communications for the above noted project. The document outlines the features of this new highway, which links Highway 403 with Caledonia. Alternatives and environmental effects are discussed in detail.

The highway will be beneficial to the Fire Department and other emergency personnel, because it will provide better access to the Hamilton Airport.

Much of the land of which this highway passes is rural farmland, and the construction status has not been discussed yet.

At this time, we have no concerns with respect to this proposal.

R. R. Philippe
R. R. Philippe, P.Eng.
Chief
Technical, Research and
Consulting Services
c.c.: C. J. A. Coles - OPP

RRP/jjj

Scotch 7684 "Post-it" Routing/Request Pad

ROUTING - REQUEST

To *JAY NUTTALL*
READ *PROCESSED AS DISCUSSED BY*
HANDLE *PROV. TELEPHONE TO DAY*
APPROVE *RETURN CALLEEN MORRIS*
FORWARD *ADMIN. ASSIST. RE-*
RETURN *PLACING L. CEGLAR*
KEEP OR DISCARD *J. J.*
REVIEW WITH ME *J. J.*



Ontario

~~ONTARIO~~
~~Environment~~

~~ONTARIO~~
~~Environment~~

Ministry of
Tourism and
Recreation

Ministère du
tourisme et
des loisirs

77 Bloor Street West
Toronto, Ontario
M7A 2P8

77 rue Bloor ouest
Toronto, Ontario
M7A 2P8

- 2 -

June 5, 1987

JUN 10 1987
CENTRAL REGION
PLANNING AND DESIGN ENVIRONMENTAL UNIT

Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation and Communications
Planning and Design Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: HIGHWAY 6 NEW, HAMILTON TO CALEDONIA
W.P. 86-84-00
EA REPORT
PRE-SUBMISSION DRAFT REVIEW

Staff from this Ministry have reviewed the
above-noted document and have the following
comments to make:

- From a recreational perspective, we anticipate
no major impact on related facilities and
services, while from a tourism perspective, we
anticipate beneficial impacts. However, the
need to provide adequate and appropriate
signage still remains. (See this Ministry's
letter dated November 4, 1985.)
- Regarding the questions found in Attachment 1
we have the following answers:

Question 1: Yes

Question 2: Yes

Question 3: Unable to evaluate

Question 4: Yes

Question 5: N/A

Question 6: Tourism and recreational impacts
appear to be minimal. A possible
major exception is Hamilton
Airport which could become a major
tourism-related facility.
Appropriate access and mitigation
measures appear to have been taken.

Question 7: This Ministry acted as a reviewer
during the P.S. period. We are
satisfied that our advice was
taken into account.

Ruth M. Cornish
Ruth M. Cornish
Director
Strategic Policy Branch



700 University Avenue Toronto Ontario M5G 1X6

June 8, 1987

Mr. A. Jay Nuttall
Environmental Planner
Ministry of Transportation and
Communications
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

**Highway 6 New Hamilton to Caledonia
Environmental Assessment
Draft Review**

We refer to your letter of May 6, 1987 and the draft Environmental Assessment Report on the subject project.

We have reviewed the report and we are satisfied that our comments and concerns have been addressed in the Environmental Assessment. However, I would like to draw your attention to Table 4.3.6 - Summary of Existing and Future Utility Plants.

The table notes that "crossing Hydro line immediately south of Book Road may not be feasible" It has been our understanding that the preferred alignment will not necessitate such a crossing. Please advise if this is not the case.

We appreciate the opportunity to comment on the draft Environmental Assessment.

Yours truly,

R.A. Brown

R.A. Brown
Director
Design & Development Division
- Transmission

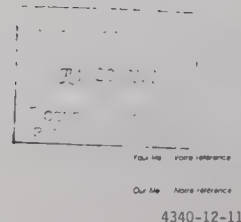
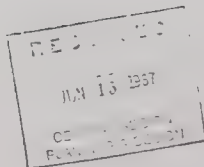


Environment
Canada

Environnement
Canada

Environmental
Protection

Protection de
l'environnement



July 24, 1987

Mr. A. Jay Nuttall
Environmental Planner
Planning and Design
Environmental Unit
Ministry of Transportation and Communications
Central Region
500 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall,

Re: Highway 6 New, Hamilton to Caledonia W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review

Further to our telephone conversation on the abovementioned subject, please be advised that Environment Canada has no concerns or comments pertaining to the pre-submission draft Environmental Assessment Report Highway 6 New, Hamilton to Caledonia.

Sincerely,

S. Llewellyn

S. Llewellyn, P. Eng.
Manager, Program Coordination
Environmental Protection
Ontario Region

cc: K. Underwood, MOE



OHSWEKEN, ONTARIO,

CANADA N0A 1M0

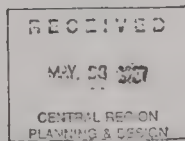
Office: (519) 445-1201 Research: 445-2053 Economic Development: 445-2201 Welfare: 445-2084

May 21, 1987

Mr. A. J. Nuttall
Environmental Planner
Planning and Design
Central Region
Ministry of Transportation
and Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

Re: Highway 6 New, Hamilton to Caledonia
W.P. 86-84-00
Environmental Assessment Report
Pre-submission Draft Review



Thank-you for the Environmental Draft Review enclosed with your May 6, 1987, letter pertaining to the above-noted subject.

After studying this report from the Six Nations Lands Research point of view, the identification and proper monitoring of the Neutral Indian Village Site as identified on Alternative "C", will become a major issue if Alternative "C", is selected.

As relates to the comments on page 163 of this report, please note that the Six Nations of the Grand River Indians are filing a formal land claim with the Minister of Indian Affairs as a result of his attached June 20, 1986, letter. May this be for information purposes only.

Mr. Nuttall

-2-

May 21, 1987

Also, Mrs. Caron Smith, the Six Nations Band Planner is presently reviewing this Environmental Assessment Report and will be providing you with her comments under a separate letter.

I trust we may look forward to your continued communications.

Sincerely,

SIX NATIONS RESEARCH DEPT.

Phil Monture
Research Director

PM:ld

c.c. Caron Smith, Band Planner

attach.



OHSWEKEN, ONTARIO.

CANADA N8A 1M0

Office: (519) 445-1201 Research: 445-2053 Economic Development: 445-1201 Welfare: 445-2084

Minister of Indian Affairs
and Northern DevelopmentMinistre des Affaires
indiennes et du Nord canadienThe Honourable L'Honorable
David Crombie

JUN 20 1986

Chief William Montour
Six Nations Council
OHSWEKEN, Ontario
NOA 1M0

Dear Chief Montour:

Thank you for your April 7, 1986 letter concerning the new alignment for Highway 6 through the Township of Seneca, which is proposed by the Ontario Ministry of Transportation and Communications.

The lands comprising Seneca Township were included in a surrender taken with the Six Nations Indians on January 18, 1841 whereby all the remaining lands on the Grand River reserved for the Six Nations (with the exception of the Johnson Settlement) were surrendered for sale for the benefit of the Six Nations.

During the ensuing years the lots adjoining the Hamilton - Port Dover Plank Road in the Township of Seneca were sold, the final letters patent having been issued in 1870. Since it appears that there are no remaining lands along the route of the highway for which there is an Indian interest, I am unable to intercede with the provincial ministry on your behalf.

If you feel that the band does have an interest, you may wish to present a formal claim, with the necessary documentation, to the Specific Claim Group of the Office of Native Claims.

Take care.

Sincerely,

David Crombie

7/7/86

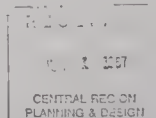
RECEIVED

It's our year! C'est notre année!
IN MOVEMENT - EN MOUVEMENT

JUL 08 1986

SIX NATIONS
LAND RESERVE

May 26, 1987

Mr. A. J. Nuttall
Environmental Planner
Planning and Design
Central Region
Ministry of Transportation
& Communications
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Dear Mr. Nuttall:

RE: Highway 6 New, Hamilton to Caledonia
UP 86-84-00
Environmental Assessment Report
Pre-Submission Draft Review

This letter is to acknowledge receipt of the above noted study. In review of the Environmental Assessment Report, and recommended Western Corridor for the new Highway 6, my comments are limited, due to the Six Nations Reserve being located outside the intensive study area.

The Six Nations Reserve is adjacent to the north-west section of Caledonia by-pass which is in operation. I can appreciate the concern of area municipalities and residents who have expressed concerns of heavy traffic particularly through the town of Caledonia, as many reserve residents also utilize services of this community and experience much of the same problem. Since the construction of the "Thiefwood Bridge" on Highway 54 west of Caledonia, this same problem has caused concern of local reserve residents, particularly within the Village of Ohsweken located on Thiefswood Road which connects with Highway 54.

It appears that some of the current overflow traffic from Highway 6 to Caledonia to Highway 54, gain access to Brantford, Simcoe, and smaller area communities south of Six Nations either by travelling through or around the reserve. However, from the Pre-Submission Draft Review and future plans will hopefully eliminate heavy traffic problems through increased use of the Caledonia By-pass.

Thank you for giving us an opportunity to comment on the study and we look forward to future communication.

Sincerely,

Caron T. Davis/Smith
Band Plannercc: Chief William Montour
Phil Monture
Research Director



Ontario

- 2 -

Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Telephone: 224-7599 , 1987

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-submission Draft Environmental Assessment Report

Thank you very much for the comments you have provided on behalf of your agency or Ministry, as a result of your review of the above-noted draft EAR. Your response will be given consideration in revising the EAR text for formal submission.

Your assistance in this review is appreciated.

Yours truly,

A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver

Ms. Ruth M. Cornish
Director, Strategic Policy Branch
Ministry of Tourism & Recreation
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Senior Policy Advisor
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Mr. R. R. Philippe, P. Eng.
Chief, Technical, Research
& Consulting Services
Ministry of the Solicitor General
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Attention: Mr. J. Johnson

Mr. S. Llewellyn, P. Eng.
Manager, Program Co-ordinator
Environmental Protection
Environment Canada - Ontario Region
25 St. Clair Avenue East
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M4T 1M2

Ms. Caron T. Davis/Smith
Band Planner
Six Nations Council
Ohsweken, Ontario
NOA 1MO

cc: P. Monture
Six Nations Research
Officer

Mr. Ron Kennedy
Senior Planner
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Association of Conservation Authorities of Ontario
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Mr. R. M. Farewell
Planner
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Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Telephone: 224-7599

September 24, 1987

Mr. Peter Carruthers
E.A. Co-ordinator
Heritage Branch
Ministry of Citizenship & Culture
2nd Floor
77 Bloor Street West
Toronto, Ontario
M7A 2R9

Dear Mr. Carruthers:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of August 6, 1987, providing comments from your ministry's review of the Highway 6 New pre-submission draft E.A.R.

The Study Team has carefully considered these comments and, where appropriate, has made revisions to the E.A.R. in preparation for formal submission. The attachment to this letter outlines our consideration of these comments and the changes we have made as a result.

The attached comments are felt to resolve any concerns or problems you have identified. As such, we are not proposing to meet with you or other representatives of your organization at this time, and will proceed to formal submission of the Environmental Assessment Report as early as possible, during the coming autumn.

Should you have any questions about the attached comments, please contact either the Project Manager, Mr. Peter Shaver, P. Eng. (224-7579) or me (224-7599). Your assistance in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. J. Nuttall
A. J. Nuttall,
Environmental Planner

Mr. Peter Carruthers
E.A. Co-ordinator
Heritage Branch
Ministry of Citizenship
& Culture
2nd Floor,
77 Bloor Street West
Toronto, Ontario
M7A 2R9

Attachment to letter to P. Carruthers

Response to comments in letter of August 6, 1987

1. Your comment re: s.4.3.3 (i.e. Mount Hope)

The significance of Mount Hope as an important cultural landscape area within the Study Area is recognized in s.4.3.4. However, the community itself was not identified as an Environmentally Significant Area (E.S.A.) for the purposes of the Study, except inasmuch as it extends into the White Church Road area. The historical core area was not identified as requiring the additional consideration as an E.S.A. On this basis, no changes to the E.A.R. have been made.

2. Your comment re: s.4.3.4 Heritage Resources

In the E.A.R., section 4.3.4 Heritage Resources consists of two sub-sections: s.4.3.4.1, Historical and s.4.3.4.2., Archaeological. As a result, no changes have been made to the E.A.R. to elaborate further the components of heritage resources.

3. Your comment re: s.4.3.4.2 Archaeology

Changes have been made to s.4.3.4.2 on the basis of your and other comments to clarify further the status of M.T.C.'s archaeological investigations and commitments for further work. This includes our commitments for appropriate mitigation as determined on the basis of additional investigations. As well, the revised E.A.R. provides a clearer statement of why archaeological resources have not been considered as an Environmentally Significant Issue.

Outside of the changes made to the E.A.R. wording, we recognize that certain types of appropriate mitigation of impacts to archaeological resources are likely to be quite expensive. In keeping with our past practices, the decision to undertake such mitigation, or to investigate and implement alternative forms of mitigation, is made on the basis of recommendations from licenced

AJN/et

cc: P. Shaver
I. Williams
P. Leech



- 2 -

archaeologists engaged by this Ministry. The ongoing investigations (survey) along the recommended alignment will contribute to these decisions.

4. Your comment re: Table 5.8.1

Changes to Table 5.8.1 (renumbered to Table 5.3) "Factors used for the detailed assessment of altered alignments" as you request are considered inappropriate by the Study Team, for the following reasons, and have not been made:

- a) The table was presented for discussion and comment during the study through the External Team meetings and mailings. No comments or concerns were recorded requesting a change to the "Heritage" section of the table.
- b) As noted in our response, above, heritage resources are recognized to include both historical (historic, architectural and aesthetic) and archaeological components. This is illustrated by the inclusion, based on existing documentary evidence, of a historic Neutral village site along Alternative "C".

5. Your comment re: Table 6.4

The wording of Table 6.4 - "Summary of Commitments to Future Work" has been altered to strengthen the commitments for archaeological resources. The "Future Work Proposed" notation will read: "Additional field surveys, documentation and appropriate mitigation of impacts to be carried out prior to construction".

6. As a response to your comments regarding page numbering, please be advised that the formal E.A.R. will contain paginated main sections, and cross referencing to Appendices and between Parts I and II will be made easier by the use of coloured dividers.

A. J. Nuttall
Environmental Planner
M.T.C.-Central Region

A. J. Nuttall

Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6Z9

Telephone: 224-7599

September 24, 1987

Mr. R. W. Chrystian
Director of Planning &
Engineering
Hamilton Region
Conservation Authority
P.O. Box 7099
Mineral Springs Road
Ancaster, Ontario
L9G 3L3

Dear Mr. Chrystian:

Re: Highway 6 New
Hamilton to Caledonia
W.F. 36-64-CC
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of July 16, 1987, providing comments from your ministry's review of the Highway 6 New pre-submission draft E.A.R.

The Study Team has carefully considered these comments and, where appropriate, has made revisions to the E.A.R. in preparation for formal submission. The attachment to this letter outlines our consideration of these comments and the changes we have made as a result.

The attached comments are felt to resolve any concerns or problems you have identified. As such, we are not proposing to meet with you or other representatives of your organization at this time, and will proceed to formal submission of the Environmental Assessment Report as early as possible, during the coming autumn.

Should you have any questions about the attached comments, please contact either the Project Manager, Mr. Peter Shaver, P. Eng. (224-7579) or me (224-7599). Your assistance in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. J. Nuttall

A. J. Nuttall,
Environmental Planner

AJN/et
cc: P. Shaver
I. Williams
E. Leech

Mr. R. W. Chrystian
Director of Planning & Engineering
Hamilton Region Conservation
Authority
P.O. Box 7099 - Mineral Springs Road
Ancaster, Ontario
L9G 3L3

Attachment to letter to R. W. Chrystian

Response to comments in letter of July 16, 1987

1. Your comment re: on site flooding and erosion.

As you request, we will submit a copy of the relevant Design and Construction Reports to your Authority for information purposes prior to construction. Additional consultation will be made with the H.R.C.A. during the course of our detailed drainage investigations for areas within the H.R.C.A.'s jurisdiction.

2. Your comments re: storm water management

In response to your comments we have made the following changes to the E.A.R. text and tables:

a) Part I, s.4.2.6.1 - Hydrology

- flooding and erosion potential of downstream sections of Ancaster Creek has been identified in subsections (ii) and (iii).

b) Table 5.8.2 (renumbered to Table 5.4) - General Environmental Effects and Standard Mitigating Measures

- notation added for volume and frequency of stormwater flow: "normally investigated as part of detail design drainage investigations to determine measures to minimize amount of increase to adjacent water courses: flow retention measures considered when applicable."

- also, Table 6.4 - Summary of commitments to Future Work, has been altered to include reference to "extent of increase to volume and frequency of flow from storm events; appropriate mitigation to be determined."

c) Part II, Table 4.1 Description of Major Construction Items and Activities

- changes to this table were not considered appropriate by the Study Team for the following reasons and no changes have been made to it:

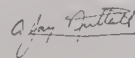
- general effects of construction, both long and short term, will be considered during drainage studies completed during detail design. Table is included under the mitigation notation (J) "appropriate drainage strategy", already in the table.

3. Your comments re: pagination

As a response to your comments regarding page numbering, please be advised that the formal E.A.R. will contain a combination of pagination and coloured dividers, to assist the reader in locating relevant portions of the document. The draft E.A.R. did not contain page numbers, so as to encourage comments to be referenced by section, subsection or table. As pagination would be expected to change between the draft and final E.A.R. versions due to text changes, the referencing of reviewers comments would be more confusing in a page-only format.

The pre-submission draft strategy regarding pagination is determined by each individual Study Team. As such, I cannot ensure that unnumbered pages will not occur in future submissions to your office, for other highway projects.

A. Jay Nuttall
Environmental Planner
M.T.C. Central Region





Ontario

Ministry of
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5000 Yonge Street
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Telephone: 224-7559

June 3, 1987

Mr. Steven Mitchell
Ministry of Education
21st Floor
Mowat Block
Queen's Park
Toronto, Ontario
M7A 1L2

Dear Sir:

Re: Hwy. 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-submission Draft E.A.R.

Thank you for your letter of May 20, 1987 in response to my submission of a draft copy of this project's Environmental Assessment Report (EAR) for your Ministry's review and comment.

The pre-submission draft EAR for this project has been sent to various ministries and agencies for review, and their co-ordination of individual reviewers' comments was requested. This would include the co-ordination of review comments from organizations which the ministries or agencies feel are necessary. This follows a standard procedure for our pre-submission consultation process and mirrors closely the formal review process followed by M.O.E. for EAR's.

The pre-submission draft EAR is not being submitted to individual school boards at this time. As you know, individual school boards have been involved during the study, and further opportunity for them to review the results of the study will occur as part of the EAR review process, following actual submission of the EAR to M.O.E.

In response to your request, however, I will send Mr. Kuckyt a brief outline of the study's status and a copy of a plan showing the proposed alignment in the vicinity of the Unity Road School.

- 2 -

Should your Ministry have any additional comments or questions about the pre-submission draft EAR for this project, could you please arrange to forward them to us by our original response date of June 10, 1987.

Yours truly,

K. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
K. Underwood-M.O.E.
J. Horton



Ontario

Ministry of
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Central Region
5000 Yonge Street
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Telephone: 224-7599

June 3, 1987

Mr. G. S. Kuckyt
Business Administrator & Treasurer
Haldimand Board of Education
P.O. Box 2000
Cayuga, Ontario
NOA 1E0

Dear Mr. Kuckyt:

Re: Highway 6 New,
Hamilton to Caledonia
W.P. 36-84-00

In response to a request from Mr. S. Mitchell of the Ministry of Education, I am sending you the following summary of the status of the above-noted study.

At the present time, the Ministry of Transportation and Communications has essentially completed the preliminary design phase of the Highway 6 New study and is currently preparing to finalize an Environmental Assessment Report for submission to the Ministry of the Environment.

As we have indicated to representatives of your school board, the proposed alignment for the Highway 6 New will cross Unity Road immediately east of the Unity Road Public School. The highway will be a deep cut under Unity Road. A draft plan of the preliminary design in the Unity Road area is enclosed for your reference.

When the Environmental Assessment Report is finalized, it will be submitted to the Ministry of the Environment for the formal Environmental Review process. As part of this process, an opportunity for members of the public and interested groups, including members of the schoolboard, to review the Environmental Assessment Report and a review of it by government agencies and ministries will be provided.

I trust that this information contains the details that Mr. Mitchell indicated you wanted. Please contact either the Project Manager, Mr. P. Shaver (416-224-7579) or me (224-7599) if you have any questions.

Yours truly,

A. Jay Nuttall

A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
K. Underwood-MOE
S. Mitchell
J. Horton

Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Telephone: 224-7599

September 24, 1987

Mr. P. Shaver
Regional Director of Health
Department of Health Services
P.O. Box 897
Hamilton, Ontario
L8N 3P6

Dear Dr. Cunningham:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of July 21, 1987, providing comments from your agency's review of the Highway 6 New pre-submission draft E.A.R.

The Study Team has carefully considered these comments and, where appropriate, has made revisions to the E.A.R. in preparation for formal submission. The attachment to this letter outlines our consideration of these comments and the changes we have made as a result.

The attached comments are felt to resolve any concerns or problems you have identified. As such, we are not proposing to meet with you or other representatives of your organization at this time, and will proceed to formal submission of the Environmental Assessment Report as early as possible, during the coming autumn.

Should you have any questions about the attached comments, please contact either the Project Manager, Mr. Peter Shaver, P. Eng. (224-7579) or me (224-7599). Your assistance in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. J. Nuttall
A. J. Nuttall,
Environmental Planner

AJN/et

cc: P. Shaver
I. Williams
P. Leech

Dr. A. I. Cunningham
Medical Officer of Health
Department of Health Services
P.O. Box 897
Hamilton, Ontario
L8N 3P6

Attachment to letter to Dr. A. I. Cunningham

Response to comments in letter of July 21, 1987

1. Your comments re: wells and septic tanks
- additional notations have been made to Table 5.8.2
(renumbered 5.4) - "General Environmental Effects
and Standard Mitigating Measures".

"Removal of residences on wells and septic systems
- pump out and fill septic systems
- fill wells per M.O.E. guidelines.
Damage or relocation of septic systems or wells
- repair or relocate per M.O.E. regulations."

In addition, detail design investigations normally
carried out for drainage and other impacts will be
documented in Design and Construction Reports, including
the proposed mitigation for any impacts to residences'
wells or septic systems as a result of surface drainage
or stream relocations. The Regional Health Units
will be contacted on these matters during detail
design, as indicated in Table 6.4 of the Environmental
Assessment Report.

2. Your comments re: Cemeteries Act requirements

No cemeteries will require removal or relocation
as a result of Highway 6 New. The abandoned human
cemetery at Book Road will be retained within the
area required for the interchange and the E.A.R.
has been modified in several locations (S.6.2.10,
S.6.3.6 and Table 6.4) to note that its maintenance
is subject to Cemeteries Act requirements. M.T.C.
will enter into negotiations with the Town of Ancaster
for the Town to maintain its current responsibilities
for maintenance. M.T.C. will be required to meet
the Act's provisions until such an agreement is made.

A. Jay Nuttall
Environmental Planner
M.T.C. - Central Region

A. Jay Nuttall

Ministry of
Transportation and
Communications

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Willowdale, Ontario
M2N 6E9

Telephone: 224-7599

September 24, 1987

Mr. Ron Kennedy
Senior Planner
Office of Local Planning Policy
Ministry of Municipal Affairs
777 Bay Street
13th Floor
Toronto, Ontario
M5G 2E5

Dear Mr. Kennedy:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of May 22, 1987, providing comments
from your ministry's review of the Highway 6 New pre-submission
draft E.A.R.

The Study Team has carefully considered these comments
and, where appropriate, has made revisions to the E.A.R.
in preparation for formal submission. The attachment
to this letter outlines our consideration of these comments
and the changes we have made as a result.

The attached comments are felt to resolve any concerns
or problems you have identified. As such, we are not
proposing to meet with you or other representatives of
your organization at this time, and will proceed to formal
submission of the Environmental Assessment Report as early
as possible, during the coming autumn.

Should you have any questions about the attached comments,
please contact either the Project Manager, Mr. Peter Shaver,
P. Eng. (224-7579) or me (224-7599). Your assistance
in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. Jay Nuttall

A. J. Nuttall,
Environmental Planner

AJN/et
cc: P. Shaver
I. Williams
F. Leech



Ministry of
Transportation and
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Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Mr. Ron Kennedy
Senior Planner
Office of Local Planning Policy
Ministry of Municipal Affairs
777 Bay Street
13th Floor
Toronto, Ontario
M5G 2E5

Attachment to letter to R.R. Kennedy

Response to comments in letter of May 22, 1987

1. Your comments re: Planning Act policy statements

In response to your comments concerning the approved
Mineral Aggregate Resources statements, and the proposed
Foodland Preservation, and Floodplain Planning statements,
we have made references in the E.A.R. to each:

Mineral Aggregate Resources - s.4.3.1 Existing Land
Use - Ancaster
- resource, and effect on resource outlined
- reference made to policy statement

Foodland Preservation - s.4.3.1. Existing Land Use
- Agriculture
- reference made to proposed policy statement

Floodplain Planning - s.4.2.6.1(i) Hydrology
- reference made to proposed policy statement

2. Your comments re: Official Plan Approval Date

Section 4.3.2(i) has been modified to show that not
all of the Haldimand-Norfolk Planning Area has been
approved by your Ministry.

A. Jay Nuttall
Environmental Planner
M.T.C.-Central Region

A. Jay Nuttall
- 1 -

Telephone: 224-7599

June 18, 1987

Ms. Judy Clapp
Executive Co-ordinator
Ontario Native
Affairs Directorate
18 King Street East
3rd Floor
Toronto, Ontario
M5C 1C5

Dear Ms. Clapp:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-submission Draft E.A.R.

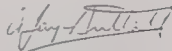
Thank you very much for your letter of June 8, 1987 with
comments about the above-noted draft report. The contribution
of your Directorate is appreciated.

As I indicated to Mr. Ugarenko of your office during a
telephone conversation on June 9, 1987, the Highway 6
New study has involved the Six Nations, and has already
received comments from their review of the draft E.A.R.
The presence of their representatives as part of the "External
Team" for the study is documented in Appendix material
of the draft E.A.R. Because no significant concerns were
raised which appeared to affect the study, the main body
text makes no reference to their role in the study.

The New Credit Band was not involved in the study due
to the considerable distance (over 12 km) between the
Reserve and the Study Area. However, after speaking with
Mr. Ugarenko, I have contacted the Band Chief, Mr. W.
G. King, and have sent a copy of the draft E.A.R. for
both information and review purposes, with a request for
comments.

We hope to be able to incorporate the comments received from both of these groups in revisions to the E.A.R. for formal submission to the Ministry of the Environment later this summer.

Yours truly,



A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
H. A. McNeely
L. Dutchak
B. Hodgins
B. Ward/K. Underwood



Ministry of
Transportation and
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Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6Z9

Telephone: 224-7599

June 18, 1987

Chief W. G. King
New Credit Council
R.R. #6
Bagersville, Ontario
NOA 1H0

Dear Sir:

Re: Highway 6 New
Hamilton to Caledonia
Pre-Submission Draft
Environmental Assessment Report
W.P. 36-84-00

I am sending a draft copy of the above-noted Environmental Assessment Report (EAR) to you for the interest and review of the New Credit Band, as a result of our telephone conversation of June 15, 1987.

This draft has been produced as part of the Environmental Assessment process for the Hamilton-to-Caledonia portion of Highway 6 New. It provides a detailed outline of the deliberations and evaluations which have resulted in the selected alternative between Ancaster and the Caledonia Bypass. The draft EAR has been submitted to various ministries and agencies in order to ensure that it is completed, prior to formal submission under the Environmental Assessment Act.

Comments received from the Ontario Native Affairs Directorate indicated that both the New Credit and the Six Nations should be contacted about the proposal. Because of their close proximity to the Study Area, the Six Nations have been consulted through the study. The New Credit Band was not contacted because of the considerable distance between the Reserve and the Study Area.

As we discussed during our telephone conversation, the New Credit Band may not have a direct interest in the Study Area, but may have future concerns relating to the Hamilton to Lake Erie Highway 6 corridor, and would like to receive a copy of the draft EAR.

I am attaching a copy of the standard transmittal letter which accompanied our submissions to ministries and agencies in May, 1987. In it you will note a series of questions which were designed to evaluate the draft's completeness. In your review of the draft EAR, these questions may be of help in framing your response as to how the proposed highway will impact your community.



Ministry of
Transportation and
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5000 Yonge Street
Willowdale, Ontario
M2N 6E9

- 2 -
Unfortunately, our requested date for responses has passed but I would ask that any comments or concerns of the New Credit Band be forwarded to me as quickly as possible (by post or telephone, as appropriate). A response within three weeks of your receipt would be greatly appreciated so that we may include their consideration in our formal submission.

Please contact me directly if you have any questions about the draft EAR or the study which has resulted in the selected alternative. I look forward to receiving your Band's comments.

Yours truly,

A. Jay Nuttall
Environmental Planner

AJN/et

Encl.

cc: P. Shaver
K. Underwood
J. Clapp

Telephone: 224-7599

September 24, 1987

Mr. A. S. Holder
Regional Director
Central Region
Ministry of Natural Resources
10670 Yonge Street
Richmond Hill, Ontario
L4C 3C9

Dear Mr. Holder:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of June 26, 1987, providing comments from your ministry's review of the Highway 6 New pre-submission draft E.A.R.

The Study Team has carefully considered these comments and, where appropriate, has made revisions to the E.A.R. in preparation for formal submission. The attachment to this letter outlines our consideration of these comments and the changes we have made as a result.

The attached comments are felt to resolve any concerns or problems you have identified. As such, we are not proposing to meet with you or other representatives of your organization at this time, and will proceed to formal submission of the Environmental Assessment Report as early as possible, during the coming autumn.

Should you have any questions about the attached comments, please contact either the Project Manager, Mr. Peter Shaver, P. Eng. (224-7579) or me (224-7599). Your assistance in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. J. Nuttall,
Environmental Planner

AJN/et

cc: P. Shaver
I. Williams
F. Leech
M.N.R. Cambridge - W. R. Catton
M.N.R. Niagara - A. M. Harjula

Mr. A. S. Holder
Regional Director
Central Region
Ministry of Natural Resources
10670 Yonge Street
Richmond Hill, Ontario
L4C 3C9

Attachment to letter to A. S. Holder

Response to comments in letter of June 26, 1987.

1. Your comments re: Recognition of Vegetation as a significant environmental issue.

Recognition of vegetation as an identified "Environmentally Significant Issue" (E.S.I.) for the pre-submission draft E.A.R. did not occur, due to an apparent semantics problem. In our study process, it should be noted that a significant environmental issue need not automatically be an E.S.I. An E.S.I. requires additional investigation or analysis to achieve an acceptable level of information upon which route selection and preliminary design acceptance can be based; not all significant environmental issues require such additional effort. Unfortunately, our use of the "E.S.I." term, as outlined in our External Team correspondence and meeting with your Ministry, did not result in a response from your Ministry in these terms.

We are pleased at this time, however, to recognize that the meetings held with representatives of M.N.R., and the Study's extensive consideration of vegetation do in fact reflect that Vegetation (Woodlots, Forest areas) should be considered as an "Environmentally Significant Issue".

Consequently, we have revised the E.A.R. to reflect this change. the following alternations will appear in the formal E.A.R. submission to M.O.E.:

- a) Table 1.1 - Vegetation (Woodlots, Forest areas shown as an E.S.I.
- b) s.4.2.3.(iv) - Vegetation (Woodlots, Forest areas) identified as an E.S.I.
- c) s.6.3.7 Vegetation - new section added to summarize extent of impacts to vegetation and outline comments to future work/proposed mitigation measures
- d) Table 6.4 - Vegetation shown as an E.S.I.

- 2 -

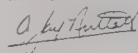
e) Table 5.8.1 (renumbered 5.3) - revised to show Vegetation (Woodlots, Forest areas) as an E.S.I. (Note that the criteria for this section of the table, and for subsequent evaluation tables, has not needed to be altered. These are a reflection of our discussions with M.N.R. representatives through the Study.)

Your comments re: Impact to licensed sand and gravel operation.

The E.A.R. text has been revised to recognize the licensed sand and gravel operation your letter identified, and to make reference to the Mineral Aggregate Resources policy statement. (s.4.3.1-Existing Land Use: Ancaster).

Our attempts to contact the licensee of this operation to determine how our proposal may affect his operation have not been successful. As a result, our text revision has not been able to expand on this, and our revision indicates that the loss of the resource is not expected to affect the long-term availability of sand and gravel in the area. The use of this potential source of aggregate material for highway construction will be investigated during detail design.

A. Jay Nuttall
Environmental Planner
M.T.C. - Central Region





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5000 Yonge Street
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Telephone: 224-7599

September 8, 1987

Mr. A. Garfin
Senior Policy Advisor
Ministry of Northern
Affairs & Mines
9th Floor
10 Wellesley Street East
Toronto, Ontario
M4Y 1G2

Dear Mr. Garfin:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-submission Draft Environmental Assessment

Thank you very much for the comments you have provided on behalf of your Ministry, as a result of your review of the above-noted draft EAR. Your response will be given consideration in revising the EAR text for formal submission.

The information accompanying your response is appreciated, and has been considered for the study. We will advise M.O.E. that your Ministry will review the formal E.A.R. submission from the "Mines" perspective.

Your assistance in this review is appreciated.

Yours truly,

A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
K. Underwood-M.O.E. E.A. Branch

Ontario

Ministry of
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5000 Yonge Street
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Telephone: 224-7599

July 15, 1987

Ms. Carol E. Lonero
Economist - Regional Issues
Sectoral & Regional Policy Branch
Ministry of Treasury and Economics
4th Floor, Frost Building North
95 Grosvenor Street
Toronto, Ontario
M7A 1Y9

Dear Ms. Lonero:

Re: Highway 6 New, Hamilton to Caledonia
Pre-submission Draft E.A. Report Review
W.P. 36-84-00

This will confirm our telephone conversation of July 8, 1987 regarding the above-noted review. I understand that normally the Ministry of Treasury and Economics retains E.A. Reports for information purposes but does not respond through the formal E.A. process.

Thank you for indicating during our conversation that your Ministry has no concerns with the Highway 6 New study and draft E.A. Report at this time, and will not be responding further to the draft report.

Please contact me if any concerns are identified.

Yours truly,

A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
K. Underwood-M.O.E.

Ministry of
Transportation and
Communications

Planning and Design
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5000 Yonge Street
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M2N 6Z9

Telephone: 224-7599

September 24, 1987

Mr. R. A. Brown
Director - Design &
Development Division (Transmission)
Ontario Hydro
700 University Avenue
Toronto, Ontario
M5G 1X6

Dear Mr. Brown:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-Submission Draft E.A.R. Review Comments

Thank you for your letter of June 8, 1987, providing comments from your ministry's review of the Highway 6 New pre-submission draft E.A.R.

The Study Team has carefully considered these comments and, where appropriate, has made revisions to the E.A.R. in preparation for formal submission. The attachment to this letter outlines our consideration of these comments and the changes we have made as a result.

The attached comments are felt to resolve any concerns or problems you have identified. As such, we are not proposing to meet with you or other representatives of your organization at this time, and will proceed to formal submission of the Environmental Assessment Report as early as possible, during the coming autumn.

Should you have any questions about the attached comments, please contact either the Project Manager, Mr. Peter Shaver, P. Eng. (224-7579) or me (224-7599). Your assistance in providing draft E.A.R. review comments is greatly appreciated.

Yours truly,

A. J. Nuttall
A. J. Nuttall,
Environmental Planner

AJN/et

cc: P. Shaver
I. Williams
F. Leech

Mr. R. A. Brown
Director - Design &
Development Division (Transmission)
Ontario Hydro
700 University Avenue
Toronto, Ontario
M5G 1X6

Attachment to letter to R. A. Brown

Response to comments in letter of June 8, 1987

1. Your comment re: Table 4.3.6 - Summary of Existing & Future Utility Plant.

This table (renumbered to Table 4.3 has been modified to clarify the comments relating to potential crossings of the hydro corridor south of Book Road. This table occurs in the "Existing and Future Conditions" section of the E.A.R., and provides the background information which was considered in the comparison of 3.1 alternatives.

Your understanding that the recommended alternative will not cross the hydro lines immediately south of Book Road is correct. Our modification outlines that other alternatives, which were not selected, might have feasibility problems with such a crossing.

A. Jay Nuttall
Environmental Planner
M.T.C.-Central Region

A. Jay Nuttall



Ontario

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Telephone: 224-7599

December 4, 1987

Ms. K. Underwood
Review Co-ordinator
Environmental Assessment Branch
Ministry of the Environment
135 St. Clair Avenue West
Suite 100
Toronto, Ontario

Dear Ms. Underwood:

Re: W.P. 36-84-00
Highway 6 New
Hamilton to Caledonia
Pre-submission Draft E.A.R. Comments

As a result of the comments you have provided from your review of the Highway 6 New draft EAR, and our meeting on September 3, 1987, I am pleased to provide the attached information outlining our response to your concerns. This attachment includes our consideration of your comments, and sections of the EAR text which have been revised. I trust that you will find these satisfactory.

As I have indicated previously, we are proceeding toward formal submission of the EAR shortly and there appear to be no major outstanding issues that appear to be of significance. I am enclosing, for your reference, a set of correspondence relating to the pre-submission draft review by external agencies, as you had requested. The last major set of comments to be dealt with were those of the M.O.E.-Land Use (Noise) section, and we have made textual changes to address their comments. I will be advising L. Stanley, the E.A. co-ordinator there, that we will be formally submitting on the basis of these changes.

Finally, I understand that our proposed map format, as required by O.Reg. 205, is acceptable for M.O.E. purposes. The two unbound maps will be included with the formal submission.

Thank you very much for your assistance during the draft EAR review process. We appreciate the thoroughness of the comments that you have provided on behalf of the E.A. Branch, and look forward to our formal submission shortly. In this light, could you please confirm the number of review copies of the EAR document needed by M.O.E., for printing purposes.

- 2 -

Please contact me if you have any questions about the accompanying attachment, I remain,

Yours truly,

A. Jay Nuttall
Environmental Planner

AJN/et

cc: P. Shaver
I. Williams
P. Reynolds

Ms. K. Underwood
Review Co-ordinator
Environmental Assessment Branch
Ministry of the Environment
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Attachment to letter to K. Underwood

Reponse to comments in letter of July 13, 1987 and meeting of September 3, 1987 at M.T.C. offices.

1) Staging Description

The description of the undertaking has been expanded to include additional reference to staging. New text has been provided in Part 1 sections 1.2 and 6.2.13, and additional cross-referencing to Part 2, Section 5, which also provides staging information, is made. This information now complements Part 1 section 2.3.2.5.

2) "Alternatives to" and "Alternative Methods of"

Part 1 section 3 has been altered to show more clearly the Alternatives to the undertaking. These include model alternatives (transit, rail and air), operational improvements/upgrading of existing facilities, and "do nothing".

As we discussed at our September 3, 1987 meeting, the inclusion of operational improvements/upgrading of existing facilities as an "Alternative to", rather than as an "Alternative Method of carrying out the undertaking", as your letter suggests, is based on the following:

- a) The undertaking is defined as a new, ultimate 6-lane, fully grade separated, divided, rural freeway. Upgrading of the existing facility (Highway 6) is not a method of achieving this new facility, and operational improvements would not result in the desired facility.
- b) The "Guideline for the Preparation of Environmental Assessment Report One-Stage Submission" (November, 1983) and the "M.T.C. Environmental Assessment Report 'One Stage' Submission Procedural Guideline 83-2" (July, 1985) recognize "operational options" or "upgrading of the existing transportation system and highway" as "alternatives to" the undertaking.

I understand from our subsequent conversation that the position that such improvements are "alternatives to" is acceptable by your Branch for this EAR.

3) Future Conditions

Revisions have been made to Part 1 sections 4.3.6 and 4.4 (now renumbered to 4.5) to reference future conditions.

4) Mitigation Alternatives

The comparison of alternatives at each appropriate level of detail has included consideration of the application of standard mitigation measures for impacts considered to be common to alternatives at that level. Where required to make a selection between alternatives, the specific effects of the alternative at that level of detail were identified and consideration of appropriate mitigative solutions was investigated as part of the decision making process.

For example, the selection of Alternative 1 was due in part, to its location crossing at Unity Road. In comparison to alternatives 'B' and 'C', it crossed in an area of no residences, thus avoiding the direct effects that 'B' and 'C' would have had. Additionally, further investigations into the nature of this crossing determined that a cut situation would occur, which would provide further mitigation of effects specific to the site (e.g. noise, visual). These would have been available in either 'B' or 'C'. Potential effects to ground water, in the area as a result of the cut were also identified but these may be dealt with at the route alternative phase by considering standard mitigation measures for cut situations, which can be further refined in detail design, if appropriate.

5) Further Clarification

The EAR text has been revised to clarify sections you have identified in your letter. The clarifications are as follows:

- a) 2.2.2 Haldimand-Norfolk Region
 - text modified to outline Caledonia Bypass problems more clearly.
- b) 4.2.5 Wildlife
 - parts (ii) and (iii) revised to describe general conditions and sensitivity and significance more clearly.
 - special interest groups contacted are cross referenced by reference to Appendix C. (It be noted that no correspondence from wildlife interest groups is provided in the EAR as none was received by the Study Team in response to the attempted contact).

- c) 4.2.6.3 Fisheries
- text modified to provide water quality description.

- d) 4.3.4 Heritage Resources - Historical
- text revised to outline more clearly the significance and sensitivity of cultural landscape areas and to remove confusion between their treatment in the study as a whole. The Ancaster triangle and Mount Hope core were not identified as E.S.A.'s for the purpose of the study.

- e) 4.3.4.2 Heritage Resources - Archaeological
- The significance of archaeological resources has been clarified by changes to the text.

- f) 4.4 (renumbered to 4.5) Transportation Facilities
- clarification of existing Highway 6 made in text.

- g) 4.4.1 (renumbered 4.5.1) Provincial Hwys. and Mun. Roads
Traffic accidents have not been used as a justification for the undertaking. The text has been modified to relate preliminary design requirements to safety factors, largely in response to O.P.P. comments.

- h) 5.9.2/5.9.3 (sequence)
- sequence will be corrected in formal submission.

- i) 6.2.7 Airport Rd. Connection to Glancaster Rd.
Ownership (known or assumed during the study) of parcels of land along the proposed right-of-way is shown on the preliminary design plates in Part 2 Appendix A. The woodlot your letter references, is on property shown under the name "Benedict", on sheet 12A, lot 3 south half of concession 5. As all areas required by the right-of-way are referenced to these property owner names, it would be inappropriate to identify a single owner in the text.

- j) 6.2.13 Staging
A description of the timing of the proposed staging such as your comments suggest is not available. The construction of the facility is expected to occur as a result of a combination of a number of factors, including available financial resources, need and other scheduling restrictions. The Design and Construction Reports will be produced for each contract or group of contracts and will outline changes or refinements to staging current at that time.

- k) 6.3.1 E.S.A.'s etc.

Because of the confusion between municipally designated "environmentally sensitive areas" and the Environmentally Significant Areas and Issues (E.S.A./E.S.I.) used in this study, the text has been revised to remove the environmentally sensitive areas from E.S.A. status. This is documented in Part 1 sections 4.2.4 and 4.2.5 (while these sensitive designations have been regarded as important for the study, they are not directly affected by any of the reasonable alternatives and have been removed from discussion in the main body of the text).

- l) 6.3.2 Noise

As a result of our correspondence, meeting and discussions with M.O.E.-Land Use Section staff, the noise section has been revised, to describe more clearly the evaluation of noise impacts which was undertaken for the study.

In response to your question concerning the use of vegetative plantings for noise attenuation, these are not normally considered to be effective means of decreasing highway-generated noise and were considered impractical for this study. The revised text provided outlines the mitigation measures considered and indicate that vegetative plantings were not acceptable.

- m) Ontario Reg. 205

The summary chapter has been revised to include a brief summary of advantages and disadvantages (in Part 1 (new) section 1.4).

A. Jay Nuttall
Environmental Planner

k) 6.3.1 E.S.A.'s etc.

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m) Ontario Reg. 205

The summary chapter has been ^{revised} removed to include a brief summary of advantages and disadvantages (in Part 1 (new) section 1.4).

A. Jay Nuttall
Environmental Planner



Ontario

Ministry of
Transportation and
Communications

Planning and Design
Environmental Unit
Central Region
5000 Yonge Street
Willowdale, Ontario
M2N 6E9

Telephone: 224-7599

December 2, 1987

Ms. Elizabeth Stanley
Environmental Approvals
& Land Use Planning Branch
Ministry of the Environment
8th Floor
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Dear Ms. Stanley:

Re: Highway 6 New
Hamilton to Caledonia
W.P. 36-84-00
Pre-submission Draft E.A.R.

Thank you for the comments you have provided on behalf of the Ministry of the Environment as a result of your review of the Highway 6 New pre-submission draft E.A.R., our subsequent discussions, and the meeting of both R. Kravczyński and yourself with us on September 1, 1987. As you know, we have made substantial refinements to the "noise" component based on these.

The attachment to this letter outlines our consideration of and response to the various comments. Relevant portions of the revised E.A.R. text are included for your reference. We will be submitting formally the finalized E.A.R. as soon as possible.

Your assistance in the review has been appreciated. Please contact me if you have any questions.

Yours truly,

A handwritten signature in dark ink, appearing to read "A. Jay Nuttall".

A. Jay Nuttall
Environmental Planner

AJN/et
Attach

cc: P. Shaver

Elizabeth Stanley
Environmental Approvals &
Land Use Planning Branch
Ministry of the Environment
8th Floor
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Response to comments received in letters of July 27 and September 25, 1987 and at meeting of September 1, 1987 with E. Stanley and R. Krawczyniuk.

1. Drainage/Stream Crossings

Design and Construction Reports are filed on the Public Record with the M.O.E. Environmental Assessment Branch a minimum of thirty days prior to construction. Your request to receive a copy of these reports is documented in the finalized E.A.R. and a copy will be forwarded to your branch for your reference.

In addition, the Environmental Approvals and Land Use Planning Branch of M.O.E. (or appropriate successor) will be contacted during detail design with respect to drainage/stream crossings, wells and private sewer systems.

2. On-site Noise Measurements

Representative on-site noise measurements were made by our noise sub-consultant but were inadvertently omitted from the pre-

submission draft E.A.R. These were discussed at our September 1, 1987 meeting and will be included in Part I, Appendix H of the E.A.R.

3. 45 dBA Assumed Minimum Ambient

The use of 45 dBA as our assumed minimum rural ambient for noise receiver locations where traffic volume-based modelling predicted less than 45 dBA, was discussed at our September 1 meeting and subsequently, with Mr. Krawczyniuk.

The use of 45 dBA is considered to be an appropriate assumed rural ambient for the following reasons:

- a) On site measurements indicate that, along quiet (i.e. low traffic volume) roadways, night time averaged noise levels at 15 m from E.O.P. are at least 45 dBA. Because of the limited night time traffic volumes, and the low noise levels being generated, the "drop-off" of noise levels beyond 15 m may be considered minimal and the measurements are representative of areas further from the E.O.P. In essence, the measurements recorded the "rural ambient".
- b) The measurements in (a) were averaged over the 23:00 to 07:00 period. The rural ambient may be expected to increase during daytime, due to increased winds, mechanized farming operations and residential activity. Thus, the rural

ambient would be expected to increase above night time levels on a 24 hour averaging basis.

- c) 1985 on-site measurements support the 45 dBA assumption. Ambient noise levels can be expected to increase for later dates, due to such factors as additional residential development and from mechanization. The assumption of 45 dBA as a future ambient has been used as a conservative base in the study.
- d) Previous highway studies have used an assumption of 45 dBA for quiet rural areas. The text has been modified in s.4.3.5(i) to outline the above-noted rationale for the use of 45 dBA.

4. Draft Approved Subdivisions

The text of s.4.3.5 (ii) has been modified to discuss draft approved subdivisions and noise related conditions of approval.

5. "Route Planning Noise Evaluation" Report

The routes documented in Appendix H are shown on Part I Exhibit S.2 "Alternative Alignments" and portions of other Exhibits in section 5 of Part I. The original "Route Planning Noise Evaluation" report did not contain a map of alternatives considered. The duplication of an exhibit at this location in

the document would be redundant.

The identification of roadways, traffic volumes, truck percentages, etc. in a table, as requested for this report, would be redundant as the information is available elsewhere in Part I Appendix H.

6. Criteria (Noise Impacts)

The criteria for noise impacts was shown in the pre-submission draft E.A. Exhibits in sections 5 and 6 Part I as being the numbers of residences experiencing over 50 and 55 dBA as a result of the ultimate undertaking. The criteria were shown in the draft as they had been applied throughout the public and external agency participation. The draft outlined this and specifically noted that the numbers shown applied to the 1985 evaluation procedure. The new procedure required by the protocol between our two Ministries came into effect in 1986 and was discussed in the draft E.A.R., with the revised evaluation being present in Appendix H.

Following your comments and our discussions, we have revised the main body of the E.A.R. text, and the associated Exhibits (renumbered from 5.8.1, 5.9.1, 5.9.2, 5.9.3 and 6.1 to 5.3, 5.5, 5.8, 5.9 and 6.1, respectively), and tables 5.6 and 5.7, to reflect the current protocol. The text has been expanded to describe the pre-protocol procedures for the benefit of reviewers

and other readers who may have been familiar with the displays and information presented during the study and to outline the changes in approach taken in the documentation.

7. Section 6 - Noise

Section 6.3.2 has been renumbered to 6.3.1.

8. Future Traffic Volumes

As discussed at our September 1 meeting, the modelling used to generate future traffic volume assumed a growth of existing and proposed developments of the Study Area to a mature state, under a "high growth" scenario. The traffic volumes are dependent on growth and are, thus, independent of any actual date. Future traffic volumes are appropriate for at least ten years after construction.

The text in section 4.3.5 has been modified to explain the use of future traffic volumes (and their related noise volumes). As requested, we have removed the term "1996" (used only as a label in the draft) for these ten-year-after values from the main body of the text and have added an explanatory note in Appendix H.

9. A.A.D.T. vs. S.A.D.T.

Section 4.3.5 has been revised to indicate that A.A.D.T. has been

used rather than S.A.D.T. It outlines why the use of S.A.D.T. volumes is considered inappropriate.

10. Noise Impacts - Selected Alternative

Table 6.3 has been revised to outline the anticipated impacts to residential (and school) noise receiver locations experiencing over 5 dBA increases as a result of the ultimate facility, at least ten years after construction. As discussed at the meeting on September 1, this table provides much of the information requested in your July 27 letter but does not specifically provide each of the seven items indicated in your letter.

The table also references the plans in Part II Appendix 2, which show "ownership" by name. The quality of these plans will be much better than the photocopied versions contained in the draft E.A.R. and the individual building locations will be clearer.

11. Mitigation

As outlined in our discussions, the determination of feasible and cost effective mitigation has been an important aspect of the noise investigations for this study. In order to clarify and expand upon this, the text has been modified to provide greater detail as to the mitigation considered and the reasons for implementation/over-implementation at individual noise receiver locations. Table 6.3 indicates the extent of barrier required to

achieve a 5 dBA attenuation for individual sites and Appendix H provides other information regarding attenuation possibilities.

12. Commitment to Future Work

Table 6.4 has been modified to show that mitigation of noise impacts will be re-evaluated during detail design. This includes all sites which are identified as being expected to receive more than 5 dBA; these occur mainly along roads crossing the Highway 6 New alignment.

13. Section 6.3.1 (renumbered from 6.3.2) has been modified to refer to the noise protocol between our two Ministries, with respect to construction noise.

Due to the depths of overburden along the selected alternative (as outlined in Part II) blasting is not anticipated. At M.O.E.'s request, a commitment has been made in section 6.3.1 to undertake monitoring for noise and vibration impacts including pre-blast surveys, in the event that the need for blasting is identified. The exact wording suggested by your September 15 letter has not been adopted.

14. General Comments

Errors in the sequence of text in the draft E.A.R. have been correct. Additionally, Table 6.2 has been revised to show the

numbers of residential receivers expected to experience more than 5 dBA increases.

In Appendix H, "Route Planning Noise Evaluation" is a separate sub-report. Within it, "Table 1" is a summary table, included with the main body of the report. The individual tables showing various numbers of residential receivers and impacts are included in the appendix to this sub-report. The title of "Table 1" has not been changed. This was discussed at our meeting of September 1.

15. Revisions to Text

The finalized text for the noise sections of the E.A.R. is provided for the reference of M.O.E. at this time. As we indicated at the September 1 meeting and following receipt of your September 15 letter, we are not providing this text with a request for further pre-submission draft E.A.R. review, as suggested in your correspondence. We feel we have addressed the various comments adequately in our changes and as a result of our discussions.

We appreciate the additional comments provided in your September 15 letter and provide the following as an additional response.

16. As requested by M.O.E., the study team has re-assessed the adequacy of measured data used in supporting the assumption of 45

dBA as a minimum rural ambient and additional measurements were not considered necessary (see part 3 above).

17. The text of the E.A.R. has been altered to make reference to M.O.E.'s particular use of the terms "definite" and "significant". As the noise protocol between our two Ministries references only increases of more than 5 dBA as requiring some degree of mitigation effort, we have maintained the use of only the term "significant" the apply to such increases.

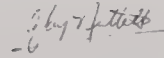
18. The text has been altered further to include consideration of the use of open friction or other specific pavement surfaces for noise attenuation purposes during detail design.

19. The "1996" label (as discussed in Part 8 above) is based on the traffic predictions produced in the modelling referred to in Part II of the document.

20. The equation used in the model referred to in the S.S. Wilson report has been confirmed as the old M.T.C. model.

21. In part 13, above.

22. In part 15, above.



A. Jay Nuttall
Environmental Planner

APPENDIX K

Compliance Monitoring

COMPLIANCE MONITORING FORMS

The "Summary of Environmental Concerns and Commitments" forms included in this appendix are provided to assist the compliance monitoring of commitments made as part of this Environmental Assessment. These forms should be read in conjunction with the discussion and documentation provided throughout the Environmental Assessment and Preliminary Design Report.

It should be noted that commitments made in this Environmental Assessment may be fulfilled during, or subsequent to, the detail design of Highway 6 New, as appropriate. All commitments may not be applicable to each contract or group of contracts and the Design and Construction Reports will document the concerns and commitments considered in each case. As well, the Design and Construction Reports will document additional concerns and commitments to further work or mitigation identified as part of the detail design phase.

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|-----------------------------|----------------------------|---------------------------|---|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 1 | Air Quality | MTC | 1.1 | Investigate restrictions on open burning | |
| | | | 1.2 | Investigate methods of dust control during open burning | |
| | | | 1.3 | Investigate controls on asphalt-laying times in areas close to residences and on location of plant, to minimize effects of odours, fumes, etc. | |
| 2 | Aggregate Mineral Resources | MNR; Municipal Affairs | 2.1 | Investigate use of potential aggregate materials located within "designation" at Hwy 403 for construction purposes, in consideration of Natural Resources Canada policy statement | |
| 3 | Agriculture | Agriculture, Forestry, MTC | 3.1 | Provide access to new farm units and sub-units created, where possible | |
| | | | 3.2 | Identify landlocked parcels for MTC acquisition, with consideration for sale of surplus properties to adjacent owners | |

GROUP W.P.: 36-84-00

CONTRACT:

DISTRICT: 4

REPORT DATE:

HIGHWAY: 5 NEW LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

Page 1

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|-------------------------|--------------|---------------------------|--|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 3 | Agriculture (continued) | | 3.3 | Investigate possible temporary restrictions to farm equipment movement as a result of construction of grade separations at local roads | |
| | | | 3.4 | Investigate possible impacts to any tile beds and outlets identified during detail design, and determine appropriate mitigation | |
| | | | 3.5 | Consider any new specialty crop areas identified during detail design, with a view to mitigating possible construction and operation/maintenance effects | |
| | | | 3.6 | Investigate possible temporary limited interest uses of agricultural areas for construction, including restoration of disturbed areas | |
| | | | 3.7 | Investigate scheduling of construction timing so as to salvage current crop | |

GROUP W.P.: 36-84-00

CONTRACT:

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 5 NEW

LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

Page 2

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | |
|------------------------------------|-------------------------------|---|---------------------------|--|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | COMPLIANCE VERIFICATION |
| 3 | Agriculture (continued) | | 3.8 | Determine whether feeding preservation policy statement has been approved, during detail design; provide consideration of approved statement in Design & Construction Report(s) |
| 4 | Borrow Sources | MTC MNR | 4.1 | Refine balance profile in order to minimize borrow requirements |
| | | | 4.2 | Investigate post-construction rehabilitation of borrow pits |
| | | | 4.3 | Investigate need to designate possible borrow sites, haul and construction access roads |
| 5 | Design & Construction Reports | MTC MNR Conservation Authorities | 5.1 | Submission to MOE for information & monitoring purposes, 30 days (minimum) prior to construction for each contract or group of contracts (Send to Environmental Assessment Branch) |
| | | | 5.2 | Submission prior to construction requested by appropriate Conservation Authority, MNR, and MOE-Land Use Branch |

GROUP W.P.: 35-84-00

CONTRACT: _____

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 5 NEW LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

Page 3

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | |
|------------------------------------|---------------------------|---|---------------------------|--|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | COMPLIANCE VERIFICATION |
| 6 | Disposal Sites | MTC | 6.1 | Investigate/identify appropriate disposal sites on or off R.O.W., including landscaping, as required |
| | | | 6.2 | Investigate minimizing amount of disposal of material unsuitable for roadway construction, by use within R.O.W. for slope stabilization, median, if possible |
| 7 | Drainage/Stream Crossings | MTC MNR Conservation Authorities | 7.1 | Undertake detailed drainage study prior to construction, including investigation of increase in volume and frequency of flow changes (storm events) |
| | | | 7.2 | Where (peak crossing) subject to HRA review (Fill, Construction & Alteration to Waterways regulations) |
| | | | 7.3 | Appendix (Peak crossing subject to HRA review (Fill Construction & Alteration to Waterways regulations) |
| | | | 7.4 | Review stream crossings, fill permits & structure designs |

prior to construction

GROUP W.P.: 35-84-00

CONTRACT: _____

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 5 NEW LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

Page 4

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|--|--------------|---------------------------|--|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 7 | Drainage/Stream Crossings (continued) | | 7.5 | Investigate potential for and possible mitigation measures for erosion at stream crossings and sedimentation from erosion, construction of water control structures, fill placement and cuts | |
| | | | 7.6 | Determine during detail design whether Floodplain Planning Policy statement has been approved; provide consideration of approved statement in Design & Construction Report | |
| | | | 7.6 | Investigate restrictions on refuelling, storage of fuel and pesticide containers, escape of petroleum products adjacent to watercourses | |
| | | | 7.7 | Investigate use of sedimentation ponds or other settling out measures for dewatering operations on lot watercourse diversions | |

GROUP W.P.: 36-84-00 CONTRACT: _____ DISTRICT: 4 REPORT DATE: _____
 HIGHWAY: 5 NEW LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)
 INDIVIDUAL W.P.: _____ DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|--|------------------------------|---------------------------|---|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 8 | Ground Water - Quality & Quantity | M.O.E. MTC Health Unit | 8.1 | Investigate during detail design potential for impacts to ground water quantity (i.e. effects to flow rate) and quality (i.e. chemical and organic content) due to construction, including mitigation measures and/or monitoring programme as required | |
| | | | 8.2 | Investigate during detail design potential impacts to private sewage/septic systems adjacent to alignment | |
| 9 | Heritage Resources - Historical and Archaeological | MCC MTC | 9.1 | Complete archaeological survey along alignment; based on significance of resources identified, determine appropriate mitigation measures and implement programme of appropriate mitigation; where possible, salvage or other mitigation to be implemented between time of property acquisition and construction | |

GROUP W.P.: 36-84-00 CONTRACT: _____ DISTRICT: 4 REPORT DATE: _____
 HIGHWAY: 5 NEW LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)
 INDIVIDUAL W.P.: _____ DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|-----------------------------------|---|---------------------------|--|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 9 | Heritage Resources (continued) | | 9.2 | Fence and provide access from Book Road to historic abandoned human cemetery | |
| | | Town of Ancaster | 9.3 | Negotiate with Town of Ancaster for town to continue responsibility for maintenance of cemetery | |
| | | Consumer & Commercial Relations, Ham.-Went. Reg. Health Units | 9.4 | Investigate interim maintenance requirements for cemetery under Cemeteries Act if negotiations with Ancaster not completed prior to MTC acquisition of R.O.W. | |
| | | | 9.5 | Include in property negotiations possibility of retention of stump fence remnants (if any) on private property along Butter Road, and of relocation opportunity for owner of barn on Book Road ridge at owner's cost to retain sense of farmstead grouping | |
| | | | 9.6 | All properties beyond proposed R.O.W. acquired for MTC property negotiations to be included in Heritage concerns by MTC Environmental Unit to determine appropriate mitigation | |

GROUP W.P.: 36-84-00

HIGHWAY: 6 NEW

CONTRACT: _____

LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

DISTRICT: 4

REPORT DATE: _____

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|-------------------|--------------|---------------------------|--|-------------------------|
| I.D. # | DETAILS | EXPRESSED BY | I.D. # | DETAILS | COMPLIANCE VERIFICATION |
| 10 | Landscaping | MTC | 10. | Landscaping programme to be investigated and implemented as part of, or following, construction (MTC Landscape Unit); to include construction areas within R.O.W., borrow areas as required | |
| 11 | Noise & Vibration | NOE Owners | 11. | Investigate during detail design appropriate design for mitigation at Highway crossings | |
| | | | 11.1 | Re-evaluate noise impacts at all noise sensitive sites (i.e. residential and school amenity areas) at crossings of local roads using updated traffic volume predictions; re-evaluate appropriate mitigation measures, including vertical alignment shifts, use of specific pavement types, noise berms &/or barriers, per MTC/NOE noise protocol | |
| | | | 11.3 | Investigate mitigation measures for construction noise, per MTC/NOE noise protocol | |

GROUP W.P.: 36-84-00

HIGHWAY: 6 NEW

CONTRACT: _____

LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

DISTRICT: 4

REPORT DATE: _____

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|----------------------------------|--|---------------------------|--|-------------------------|
| I.O. # | DETAILS | EXPRESSED BY | I.O. # | DETAILS | COMPLIANCE VERIFICATION |
| 11 | Noise & Vibration (continued) | | 11.1 | Investigate use of any blasting techniques appropriate to mitigating measures, including pre-blast survey and monitoring programme, as appropriate | |
| 12 | Property Acquisition | MTC Landowners Municipalities | 12.1 | Enter into negotiations to obtain right of way requirements on a willing seller basis prior to submission, if possible | |
| 13 | Signage | Ministry of Tourism & Recreation | 13.1 | Identify any property acquired which may be surplus to MTC requirements and investigate appropriateness of disposal to private sector | |
| 14 | Soils | MNR Conservation Authority | 14.1 | Investigate appropriate and adequate signing | |
| | | | 14.2 | Undertake detailed soils investigation during detail design, including bank stability and erosion potential at steep slopes | |
| | | | 14.3 | Investigate mitigation for soil erosion during construction | |

GROUP W.P.: 36-84-00

CONTRACT: _____

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 6 NEW

LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|-----------------------|--|---------------------------|--|-------------------------|
| I.O. # | DETAILS | EXPRESSED BY | I.O. # | DETAILS | COMPLIANCE VERIFICATION |
| 15 | Surface Water Quality | NOP MMP Conservation Authorities 14.2 Hom. Mnt. Health Unit MTC | 15.1 | Investigate sediment control measures | |
| | | | 15.2 | Undertake detailed drainage study during detail design; to include consideration of changes to surface water quality as result of proposed surface drainage; including consideration of possible effects to salt-sensitive areas of roadway drainage | |
| | | | 15.3 | Hamilton-Wentworth Health Unit to be advised of any anticipated effects of surface drainage from highway or relocation of streams on adjacent wells or septic systems; and of proposed mitigation during detail design | |
| 16 | Traffic and Access | MTC Schoolboards Owners Municipalities | 16.1 | Maintain access to individual residences during construction | |
| | | | 16.2 | Investigate possible detour requirements for local roads during construction of grade separations; maintain access on such local roads where possible | |

GROUP W.P.: 36-84-00

CONTRACT: _____

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 6 NEW

LOCATION: HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|------------|--|---------------------------|--|-------------------------|
| I.O. # | DETAILS | EXPRESSED BY | I.O. # | DETAILS | COMPLIANCE VERIFICATION |
| 17 | Utilities | NTC | 17.1 | Investigate modifications to utility plants during detail design | |
| 18 | Vegetation | MNR GRCA Hald.-Norfolk Public Sch. Board | 18.1 | Investigate advance tree planting at Unity Road area adjacent to school | |
| | | | 18.. | Vegetation specialist to walk centre line to locate significant plant specimens; mitigation to protect or minimize disruption/damage to regionally rare species to be determined | |
| | | | 18.3 | Investigate tree removal strategy within R.O.W., including possible pre-stressing of woodlot areas to be cleared | |
| | | | 18.1 | Investigate appropriate areas for identification of natural regeneration areas | |
| | | | 18.1 | Investigate effects of major cuts/fills on significant stands of trees and determine mitigation to minimize effects where possible | |

GROUP W.P.: 36-84-00

CONTRACT:

DISTRICT: 4

REPORT DATE:

HIGHWAY: 6 NEW

LOCATION:

HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

SUMMARY OF ENVIRONMENTAL CONCERNS AND COMMITMENTS

| ENVIRONMENTAL ISSUE/CONCERN/EFFECT | | | ENVIRONMENTAL COMMITMENTS | | |
|------------------------------------|------------------------|--------------|---------------------------|--|-------------------------|
| I.O. # | DETAILS | EXPRESSED BY | I.O. # | DETAILS | COMPLIANCE VERIFICATION |
| 19 | Waterfowl Nesting Area | MNR | 19.1 | Investigate mitigation measures to minimize disruption to waterfowl habitats during construction | |

GROUP W.P.: 36-84-00

CONTRACT:

DISTRICT: 4

REPORT DATE: _____

HIGHWAY: 6 NEW

LOCATION:

HAMILTON TO CALEDONIA (HIGHWAY 403 TO CALEDONIA BYPASS)

INDIVIDUAL W.P.: _____

DESIGN & CONSTRUCTION REPORT SECTION: _____

PART II

PRELIMINARY DESIGN REPORT

PART II
PRELIMINARY DESIGN REPORT

TABLE OF CONTENTS

| | PAGE | | PAGE |
|--|------|--|------|
| 1. INTRODUCTION | 1-1 | 6. DRAINAGE | 6-1 |
| 1.1 Report Introduction | 1-1 | 7. PRELIMINARY SOILS INVESTIGATIONS | 7-1 |
| 1.2 Objectives | 1-1 | 8. ALIGNMENT CALCULATIONS | 8-1 |
| 1.3 Background | 1-2 | 9. COST ESTIMATES | 9-1 |
| 2. TRAFFIC | 2-1 | 10. INITIATE FOR DETAILED DESIGN | 10-1 |
| 2.1 Population and Employment Projections | 2-1 | 10.1 Commitments To Future Work | 10-1 |
| 2.2 Existing Transportation Conditions | 2-6 | 10.2 Utility Relocations | 10-1 |
| 2.3 Airport Generated Traffic | 2-6 | 10.3 Contract Limitation Definition | 10-4 |
| 2.4 Truck Traffic | 2-9 | 10.4 Hydrology Study | 10-4 |
| 2.5 Forecasted Auto Traffic | 2-14 | 10.5 Soils and Foundations | 10-4 |
| 2.6 Do Nothing Alternative | 2-19 | 10.6 Transport Canada Requirements | 10-4 |
| 3. PRELIMINARY DESIGN ALTERNATIVES | 3-1 | 10.7 Confirm Cross Sections of Crossing Roadways | 10-5 |
| 3.1 Introduction | 3-1 | 10.8 Archeology | 10-5 |
| 3.2 Highway 403 Interchange Alternatives | 3-1 | 10.9 Warrant Calculations | 10-5 |
| 3.3 Book Road Crossing | 3-6 | 10.10 Illumination | 10-5 |
| 3.4 Airport Road Alignment | 3-9 | 10.11 Signing | 10-5 |
| 3.5 White Church Road Area | 3-14 | | |
| 3.6 Cross Section | 3-22 | | |
| 4. THE RECOMMENDED PLAN | 4-1 | | |
| 4.1 General | 4-1 | | |
| 4.2 General Description of the Recommended Alignment | 4-1 | | |
| 4.3 Environmental Effects and Mitigating Measures | 4-1 | | |
| 4.4 Road Crossings, Assumptions and Designations | 4-1 | | |
| 4.5 Construction Staging | 4-9 | | |
| 4.6 Property Requirements | 4-10 | | |
| 4.7 Structures | 4-10 | | |
| 4.8 Interchange/Intersections | 4-12 | | |
| 4.9 Cross Sections | 4-12 | | |
| 4.10 Illumination | 4-12 | | |
| 4.11 Signing | 4-12 | | |
| 5. DESIGN CRITERIA | 5-1 | | |

LIST OF TABLES

| | | |
|-----------|--|------|
| TABLE 2.1 | METHODOLOGY CHART POPULATION AND EMPLOYMENT PROJECTIONS | 2-4 |
| TABLE 2.2 | HIGHWAY 6 (NEW) FORECASTING STUDY AREA POPULATION AND EMPLOYMENT PROJECTIONS | 2-7 |
| TABLE 2.3 | SUMMARY OF PROVINCIAL ROAD APPRAISAL SHEETS FOR HIGHWAY 6 | 2-7 |
| TABLE 2.4 | EXISTING HIGHWAY 6 ACCIDENT SUMMARY | 2-8 |
| TABLE 2.5 | DISTRIBUTION OF AIRPORT GENERATED TRAFFIC | 2-9 |
| TABLE 2.6 | INTERVIEWS - MAJOR FIRMS IN HALDIMAND-NORFOLK | 2-10 |

LIST OF TABLES (continued)

| | PAGE |
|---|------|
| TABLE 2.7 CORRIDOR TRAFFIC PROJECTIONS | 2-18 |
| TABLE 2.8 FUTURE DESIGN HOURLY VOLUMES (DHV) AND RESULTING LEVEL OF SERVICE (L of S) | 2-19 |
| TABLE 2.9 LEVEL OF SERVICE HIGHWAY 403 UP THE ESCARPMENT . . . | 2-19 |
| TABLE 2.10 HIGHWAY 6 LEVEL OF SERVICE DO NOTHING | 2-19 |
| TABLE 3.1 COMPARISON BETWEEN ALTERNATIVES A1, A2 AND A3 AT BOOK ROAD | 3-12 |
| TABLE 3.2 DETAILED ASSESSMENT OF ALTERNATIVE A1 AND ALTERNATIVE A1A | 3-15 |
| TABLE 3.3 COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA CHIPPEWA ROAD TO GLANCASTER ROAD . . | 3-20 |
| TABLE 3.4 COMPARISON OF URBAN CROSS SECTIONS | 3-23 |
| TABLE 3.5 COMPARISON OF RURAL CROSS SECTIONS | 3-24 |
| TABLE 4.1 DESCRIPTION OF MAJOR CONSTRUCTION ITEMS AND ACTIVITIES: ASSOCIATED POTENTIAL EFFECTS AND POSSIBLE MITIGATING MEASURES | 4-2 |
| TABLE 6.1 WATERCOURSE CROSSINGS - EXISTING AND PROPOSED | 6-5 |
| TABLE 9.1 COST ESTIMATES | 9-2 |
| TABLE 10.1 SUMMARY OF COMMITMENTS TO FUTURE WORK | 10-2 |

LIST OF EXHIBITS

| | PAGE |
|---|------|
| EXHIBIT 1.1 RECOMMENDED ROUTE | 1-1 |
| EXHIBIT 2.1 EXISTING VOLUMES | 2-8 |
| EXHIBIT 2.2 FORECAST VOLUMES | 2-15 |
| EXHIBIT 2.3 FORECAST VOLUMES | 2-15 |
| EXHIBIT 2.4 FORECAST VOLUMES | 2-16 |
| EXHIBIT 2.5 FORECAST VOLUMES | 2-16 |
| EXHIBIT 2.6 FORECAST VOLUMES | 2-17 |
| EXHIBIT 2.7 FORECAST VOLUMES | 2-17 |
| EXHIBIT 2.8 FORECAST VOLUMES | 2-20 |
| EXHIBIT 2.9 FORECAST VOLUMES | 2-20 |
| EXHIBIT 3.1 HIGHWAY 403 ALTERNATIVES 1 TO 5 | 3-3 |
| EXHIBIT 3.2 BOOK ROAD CROSSINGS | 3-9 |
| EXHIBIT 3.3 ALTERNATIVE ALIGNMENTS | 3-13 |
| EXHIBIT 3.4 WHITE CHURCH ROAD AREA | 3-16 |
| EXHIBIT 4.1 STRUCTURE DETAILS | 4-11 |
| EXHIBIT 4.2 INTERCHANGE/INTERSECTION STAGES | 4-12 |
| EXHIBIT 4.3 PROPOSED CROSS SECTION | 4-13 |
| EXHIBIT 6.1 CONCEPTUAL DRAINAGE SCHEMATIC | 6-2 |

LIST OF APPENDICES

| | |
|------------|------------------------|
| APPENDIX A | PLANS AND PROFILES |
| APPENDIX B | SOILS |
| APPENDIX C | ALIGNMENT CALCULATIONS |
| APPENDIX D | MINUTES OF MEETINGS |
| APPENDIX E | CORRESPONDENCE |

1. Introduction

1.1 Report Introduction

This report section Part II covers the Preliminary Design of the section of proposed Highway 6 (New) from Highway 403 west of Mohawk Road in Ancaster to the north end of the Caledonia Bypass in the Township of Seneca. The recommended alignment for this section of Highway 6 (New) is shown on Exhibit 1.1.

This project is subject to the full requirements of the Provincial Environmental Assessment Act and consequently a single stage Environmental Assessment Report has been prepared. For information regarding alternative corridors and alignments considered and the detailed rationale for the selection of the recommended alignment shown on Exhibit 1.1, the reader is referred to the Environmental Assessment Report, Part I.

1.2 Objectives

The Ministry of Transportation and Communications is proposing to provide a fully grade separated freeway facility to:

1. Improve access to the recently expanded Hamilton Civic Airport.
2. Encourage industrial and residential growth in Townsend/Nanticoke and Hamilton-Wentworth Region.
3. Alleviate operational deficiencies on existing Highway 6.

To fulfill the purposes of the undertaking, Highway 6 (New) has the following objectives:

1. Provide access from the airport to the existing Provincial freeway system to improve accessibility to the west and east of Hamilton and to Hamilton itself.
2. Increase use of the Caledonia .
3. Improve access to and provide flexibility for development in Townsend/Nanticoke.

4. Improve access to the industrial area of lower Hamilton, such access currently provided by the local road system.
5. Select a route which can be stage constructed in a realistic and economical manner.

The identified need for a new transportation corridor between Hamilton and Nanticoke relates to municipal, provincial, and federal desires to create an environment which will encourage planned development in the area. The new route is also needed to alleviate deficiencies in the access between the Provincial freeway network and the existing and planned developments in the Hamilton/Nanticoke Corridor.

1.3 Background

In 1974, the Ministry of Transportation and Communications undertook the "Highway 6 - Nanticoke to Hamilton Joint Use Corridor Use Study". The prime objective of that study was to identify an acceptable route for new joint use transportation corridor (including a highway and other major utilities such as hydro and pipelines) between the Nanticoke area and Hamilton. A report on that study was issued in 1976.

The Joint Use Corridor Study recommended an alignment for a new route between Nanticoke and Caledonia, including the now completed Caledonia Bypass.

However, the study concluded that the alignment for Highway 6 (New) between Caledonia and the Hamilton area should not be determined until:

i) the Hamilton-Wentworth Official Plan was completed;

ii) plans for the expansion of the Mount Hope Airport were confirmed.

Also in the mid-1970s, the Ministry of Transportation and Communications designated lands along Highway 403, between Fiddler's Green Road and Mohawk Road, to protect the only available area for an interchange with Highway 6 (New), should the "West Corridor" be selected.

With the above issues resolved, the Ministry of Transportation and Communications in 1984 commissioned M.M. Dillon Limited to undertake the "Highway 6 (New) Hamilton to Caledonia Route Location and Preliminary Design Study".

An early phase of this Study was to confirm the basic corridor for Highway 6 (New). Three corridors were considered:

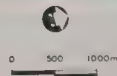
- the West Corridor (meeting Highway 403 west of Mohawk Road);
- the Central Corridor (generally close to and east of existing Highway 6, terminating at the Region of Hamilton-Wentworth's proposed East-West transportation corridor) and;
- the East Corridor (basically a southwesterly extension of the Regional Municipality's Redhill Creek Parkway route.

The West Corridor was confirmed as the recommended corridor. Details of the analysis of the corridor are included in the Environmental Assessment Report, Part I.



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



--- Study Area Boundary
- - - Highway 6 New Designated Section

Exhibit 1.1

Recommended Route

2. Traffic

(NOTE: This chapter essentially reproduces the Traffic Report prepared for the project. A summary of the traffic findings are also presented in Chapter 2 in Part I of this report.)

In order to assess the travel demand between Caledonia and Hamilton, and to provide data for use in the Preliminary Design of the Recommended Alignment, a corridor traffic forecasting and transportation analysis was undertaken.

To determine future travel demand, population and employment forecasts were prepared for two growth scenarios. From these, automobile traffic projections were made for three corridors - West, Central and East. In addition, truck traffic was forecast based upon a truck origin-destination survey and interviews with representative trucking firms.

Combined vehicle plus truck volumes were prepared for both growth scenarios for the year 2001. Additional traffic generated by the Hamilton Civic Airport expansion was also taken into consideration.

The results of the population and employment, and travel forecasting were presented in the following sections. Analysis also includes impacts to Highway 403 and the "do nothing" alternative.

2.1 Population and Employment Projections

This section documents the methodology employed in preparing existing and projected population and employment data.

In obtaining the required information, the following agencies were contacted:

- Regional Municipality of Hamilton-Wentworth;
- Regional Municipality of Halimand-Norfolk;
- Ontario Ministry of Transportation and Communications;
- Ontario Ministry of Treasury and Economics;
- Statistics Canada.

2.1.1 Agencies Contacted

Regional Municipality of Hamilton-Wentworth

The Planning Department of the Regional Municipality of Hamilton-Wentworth provided population and employment data by traffic zone for the part of the study area located in the Region.

The data contains population and employment figures for 1982, as well as "anticipated" and "high" growth projections to 2001. This data is being used by the Region in many studies including GO-ALRT, and the North-South Parkway/East-West Arterial.

Regional Municipality of Haldimand-Norfolk

The Planning Department of the Regional Municipality of Haldimand-Norfolk provided existing population and employment data based on the assessment file, census data and a recent manufacturing employment survey. In addition, Region-wide projections for population and employment are contained in the Official Plan.

Ministry of Transportation and Communications

The Ministry of Transportation and Communications provided existing and projected population and employment data. The existing information is based on data obtained from Statistics Canada and the Regional Municipalities.

The Ministry of Transportation and Communications provided two scenarios; an "anticipated" growth scenario which is based on past trends and; a "high" growth scenario which is based on municipal aspirations (Official Plans). Projected population and employment data is obtained from MTC's year 2000 COR-A and COR-B land use forecasts.

Ministry of Treasury and Economics

The Central Statistical Services Division of the Ministry of Treasury and Economics produces population projections that consider fertility rates, external migration and internal migration.

The Ministry provides data on a Planning Region and County basis. In this instance, they have provided population projections for the Regional Municipalities of Hamilton-Wentworth and Haldimand-Norfolk.

Statistics Canada

Statistics Canada publishes census data on a number of characteristics, including population and labour force. The latest full census was produced for 1981 and before that, 1971.

The data for the two Regions in the study area is available down to the municipal level, i.e. Stoney Creek, Glanbrook, Nanticoke, Haldimand, etc.

2.1.2 Methodology

The agencies contacted provided the information required to prepare the existing and projected population and employment data for the Highway 6 (New) study area.

The information collected was then reviewed and analyzed.

The existing population and employment data obtained from the Regional Municipality of Hamilton-Wentworth was considered up-to-date and suitable for this study based on discussions with Regional staff and its use in recent planning studies.

The existing population data used for the Regional Municipality of Haldimand-Norfolk was based on BPU (Basic Planning Unit) population data and planning staff's knowledge of the Region.

Existing employment data was not available for the Regional Municipality of Haldimand-Norfolk. However, through discussion with planning staff, it was agreed that Statistics Canada Labour Force data could be assumed to closely reflect the employment situation in the Region. This assumption is based on a containment theory. The containment theory suggests that people living in the Region also work there. This theory is supported by MTC's Origin-Destination survey (85% self-containment); the Region's manufacturing employment survey (90% self-containment); and MTC's employment data by traffic zone which resembles the Statistics Canada Labour Force data.

After comparing the newly generated population and employment data for Haldimand-Norfolk to the Ministry of Transportation and Communications data, Regional planning staff and the Ministry of Transportation and Communications staff agreed that both sets of data could be used as an accurate indicator of existing population and employment in the Region. It was decided that this study should utilize the Ministry of Transportation and Communications data for the Regional Municipality of Haldimand-Norfolk. This consists of existing data obtained from Statistics Canada and the Regional Municipalities and projected population and employment data obtained from MTC's year 2000 COR-A and COR-B land use forecasts.

Once this task was complete, the final data was generated and approved by the participating agencies.

In addition, provision was made to produce a range of projections to account for differing paces of development that could drastically affect the population or employment of a given Region or area.

Thus, an "anticipated" growth scenario and a "high" growth scenario for population and employment were prepared as follows:

i) "Anticipated" Growth Scenario

The "anticipated" population and employment projections assume that growth in the forecasting study area will proceed as it has in the past.

The projected population and employment figures for the "anticipated" growth scenario for Hamilton-Wentworth utilized the Region's projected (2001) population and employment figures by traffic zone. This forecast is based on past trends and used by the Region in other studies.

The projected population and employment figures for the "anticipated" growth scenario for Haldimand-Norfolk were developed on the basis of past trends and discussion with Regional staff. These projections compared favourably with MTC data. MTC data was thus used for the Regional Municipality of Haldimand-Norfolk except where it was not consistent with Regional information.

ii) "High" Growth Scenario

Although most regions experience past trend growth, some regions have the potential to go beyond past trend growth. The factors contributing to the potential for "high" growth in the forecasting study area as discussed with Regional officials include:

- complete expansion of Hamilton Civic Airport and total development of the Airport Industrial Business Park; carriers in the future;
- completion of development of plans for the new Town of Townsend;
- predicted potential development of the Nanticoke (Stelco) Works and the Lake Erie Industrial Park.

Combined, these factors can produce a growth rate far greater than has been experienced in the past. The Official Plans of the Regional Municipality of Hamilton-Wentworth and Haldimand-Norfolk both consider this growth potential by providing "high" population and employment projections.

The projected population and employment figures (2001) for the "high" growth scenario for Hamilton-Wentworth were the projected (2001) "high" population and employment data supplied by the Region. These projections were based on their Official Plan and municipal aspirations and have been used in recent planning studies.

The projected population and employment figures (2001) for the "high" growth scenario for Haldimand-Norfolk were developed on the basis of municipal aspirations and the Regional Official Plan tempered by discussions with Regional planning staff and interviews with major employers in the Region. These projections compared favourably with MTC data. The Ministry of Transportation and Communications data was thus used for the Regional Municipality of Haldimand-Norfolk except where it was not consistent with Regional information.

Table 2.1 describes and illustrates the methodology that was implemented in deriving existing population and employment figures and the "anticipated" and "high" growth projections.

TABLE 2.1
METHODOLOGY CHART
POPULATION AND EMPLOYMENT PROJECTIONS

| Methodology | A G E N C Y C O N T A C T E D | | | | |
|--------------------------|--|---|---|---|---|
| | Regional Municipality of Hamilton-Wentworth | Regional Municipality of Haldimand-Norfolk | Ministry of Transportation & Communications | Ministry of Treasury & Economics | Statistics Canada |
| INFORMATION RECEIVED | <ul style="list-style-type: none"> - Existing (1982) population and employment data by traffic zone - Projected (2001) "anticipated growth" population and employment data - Projected (2001) "high-growth" population and employment data - Information used for north-south, east-west and GO-ALRT study | <ul style="list-style-type: none"> - Existing (1981) population data - Labour force data based on census for 1981 - Employment survey data of all industries in the Region (1984) - Population projections to 2001 in Official Plan - Assessment-population data | <ul style="list-style-type: none"> - Population and employment data by traffic zone - Updated (1980) population and employment projections by traffic zone to 2001 - "anticipated growth" scenario - Updated (1980) population and employment projections by traffic zone to 2001 "high growth" scenario | <ul style="list-style-type: none"> - Population projections by Region including Hamilton-Wentworth and Haldimand-Norfolk done in 1982 to the year 2001 | <ul style="list-style-type: none"> - 1981 and 1971 census data by municipality including those in Hamilton-Wentworth and Haldimand-Norfolk |
| DATA REVIEW AND ANALYSIS | <ul style="list-style-type: none"> - Review and analysis of data - Corresponded Regional traffic zones to MTC traffic zones - Comparison of "anticipated" and "high growth" population and employment projection to MTC projections - Review and discussion of data with municipal staff | <ul style="list-style-type: none"> - Review and analysis of data - Produced "anticipated" population projections based on past trends and discussions with municipal staff - Produced "high growth" population projections based on official plans and discussions with municipal staff - Produced existing employment data based on labour force, containment principle and 1984 manufacturing employment survey - Produced "anticipated" employment projections based on past labour force trends and 1984 manufacturing employment survey | <ul style="list-style-type: none"> - Review and analysis of MTC population and employment projections for both "anticipated growth" and "high growth" scenarios - Discussion and review of data with MTC and Regional staff | <ul style="list-style-type: none"> - Review and analysis of data with Ministry of Treasury and Economics staff - Use of population projections as "anticipated growth" Regional control figures - Discussion and review of data with MTC, and Regional staff | <ul style="list-style-type: none"> - Review and analysis of data with MTC and Regional staff - Use of social and economic indicators to produce past trends for establishing growth projections |

TABLE 2.1
METHODOLOGY CHART
POPULATION AND EMPLOYMENT PROJECTIONS
(continued)

| Methodology | A G E N C Y C O N T A C T E D | | | | |
|-----------------|--|--|---|--|---|
| | Regional Municipality of Hamilton-Wentworth | Regional Municipality of Haldimand-Norfolk | Ministry of Transporta- tion & Communications | Ministry of Treasury & Economics | Statistics Canada |
| | | <ul style="list-style-type: none"> - Produced "high" employ- ment projections based on official plan, discussions with municipal staff and major employers | | | |
| DATA ACCEPTANCE | <ul style="list-style-type: none"> - Regional data accepted in its entirety. Data compares favourably with that of Treasury and Economics, Transportation and Communications and Statistics Canada - Use of existing (1982) data - Use of "anticipated" projections based on past trends - Use of "high growth" projections based on Official Plan and municipal aspirations | <ul style="list-style-type: none"> - MTC data accepted in its entirety for the Region with some minor adjustments. Compares favourably with MTC data which was produced by using same method of data review and analysis - Use of existing data updated to 1981 based on Census data - Use of "Anticipated growth" projections based on past trend growth and realistic development capabilities - Use of "high growth" projections based on Official Plan and municipal aspirations | <ul style="list-style-type: none"> - MTC data accepted for Regional Municipality of Haldimand-Norfolk with revisions - MTC data compares favourably with Hamilton-Wentworth's but Regional data accepted - MTC data compares favourably with Statistics Canada and Treasury and Economics data | <ul style="list-style-type: none"> - Population figures support the existing and projected data that has been accepted for the Study Area | <ul style="list-style-type: none"> - Statistics Canada data support figures that have been accepted for the Study Area |

2.1.3 Population and Employment Projections

After detailed discussion, analysis and review, existing and projected population and employment figures have been prepared for the Highway 6 (New) Study Area.

The figures, as shown in Table 2.2 are considered representative and have been agreed to by the agencies involved in the process.

2.2 Existing Transportation Conditions

2.2.1 Traffic Volumes

Existing traffic volumes (autos and trucks) were obtained from the Ministry of Transportation and Communications, the Region of Hamilton-Wentworth and the Region of Haldimand-Norfolk. These were obtained for all major Highways and Regional Roads between Port Dover and the City of Hamilton along the Highway 6 corridor. Volumes were also obtained for Secondary roads in the study area.

2.2.2 Highway 6

Highway 6 has a basic four-lane cross section north of Caledonia and a basic two-lane cross section south of Caledonia. The Caledonia Bypass is two lanes wide. The posted speed limit is 80 km/hr.

The existing land use adjacent to Highway 6 is primarily agricultural and light industrial with some residential and commercial uses. Along the section of Highway 6 approaching Hamilton and on Upper James in Hamilton, strip commercial development predominates. All access to Highway 6 is at-grade.

Generally the horizontal and vertical geometrics on Highway 6 meet high standards. However, some concern has been raised with the operation of the north and south ends of the Caledonia Bypass. The Ministry of Transportation and Communications is examining changes to the south end of the Bypass. Later as part of this study, the north end will be examined.

General characteristics of Highway 6 between Hamilton and Caledonia are summarized in Table 2.3. This information was obtained from the Ministry of Transportation and Communications Provincial Road Appraisal Sheets. Highway 6 carries approximately 13,500 vehicles per day (vpd)

north of the airport and 11,400 vpd south of the airport. The respective design hourly volumes (DHV) are 1,457 and 1,231 vehicles per hour (vph). Both sections operate at level-of-service "C". North of the airport there are 8.0% trucks or 1,080 trucks per day and south of the airport this increases to 9.5% but remains at 1,080 trucks per day. Existing volumes are shown on Exhibit 2.1.

2.2.3 Accidents

Traffic accident records were obtained for Highway 6 from the Ministry of Transportation and Communications for the years 1981 to 1983 inclusive. Accident statistics were compiled for two sections of Highway 6, south of the Airport and north of the Airport. These are shown in Table 2.4.

From the table, it is noted that the intersection or private drive related accidents form a high percentage of the total accidents, generally 30-50%. This is a reflection of the combination of a relatively high speed highway, at-grade intersections, and driveways fronting on the highway. The sectional rates are consistent through the three year period and are somewhat below the provincial average. Truck involvements vary considerably and range from 3% to 18% of all accidents.

2.2.4 Origin-Destination Survey

Origin-Destination (O-D) surveys were undertaken by the Ministry of Transportation and Communications in June 1984. They were conducted as part of the traffic forecasting for Highway 6 (New).

The surveys were performed at two locations, one on Highway 6 and the other on Fiddler's Green Road, both immediately south of Highway 53. Surveys were conducted separately for automobiles and trucks. For control totals, classification and Automatic Traffic Recorder (ATR) counts were taken coinciding with the O-D survey.

2.3 Airport Generated Traffic

It is estimated that the total airport vehicle trip generation in the year 2001 will be 4300 vpd. This is based on an analysis conducted by the Ministry of Transportation and Communications Demand Forecasting

TABLE 2.2
HIGHWAY 6 (NEW) FORECASTING STUDY AREA
POPULATION AND EMPLOYMENT PROJECTIONS

| Study Area | Existing | | Scenario 1 "Anticipated" Growth | | | | Scenario 2 "High" Growth | | | |
|--------------------|----------|--------|------------------------------------|--------|--------|--------|-----------------------------|--------|---------|--------|
| | Pop. | Emp. | Pop. | Growth | Emp. | Growth | Pop. | Growth | Emp. | Growth |
| Hamilton-Wentworth | 167,450 | 27,250 | 193,800 | 16 | 37,700 | 38 | 262,500 | 57 | 66,900 | 145 |
| Halldimand-Norfolk | 41,300 | 23,250 | 50,900 | 23 | 38,200 | 64 | 98,400 | 138 | 54,700 | 135 |
| Total Study Area | 208,750 | 50,500 | 244,700 | 17 | 75,900 | 50 | 360,900 | 73 | 121,600 | 141 |

TABLE 2.3
SUMMARY OF PROVINCIAL ROAD APPRAISAL SHEETS FOR HIGHWAY 6

| Section | DISTANCE (KM) | NO. OF LANES | 1983 TRAFFIC | | | % Comm. | SERVICE VOLUMES | | | | Ex. L-O-S |
|------------------|------------------|-----------------|--------------|------|-------|------------|-----------------|-------|-------|-------|--------------|
| | | | AADT | DHV% | DHV | | B | C | D | E | |
| Caledonia Bypass | 6.5 | 2 | 3,000* | 10.8 | 323 | 5.0 | - | 833 | 1,233 | 1,666 | A |
| South of Airport | 6.4 | 4 | 11,400 | 10.8 | 1,231 | 9.5 | 497 | 1,623 | 2,545 | 2,926 | C |
| North of Airport | 6.2 | 4 | 13,500 | 10.8 | 1,457 | 8.0 | 515 | 1,682 | 2,638 | 3,032 | C |

* Not based on a full year of counts

Highway 6 (New)

HAMILTON TO LALCO

ROUTE LOCATION & PRELIMINARY DESIGN

Exhibit 2.1 Existing Volumes



Legend: AADT xxxx
TRUCKS (xxxx)

DILLON

Office. The forecast is for flight related traffic only and does not reflect traffic generated by the Airport Industrial Business Park.

The existing (1981) total vehicle generation for the Hamilton Civic Airport is 1600 vpd. Based on site inspection, the MTC Transportation Demand Forecasting Office has estimated that only 50% of the existing ground traffic is generated by Nordair flights. Traffic generated by the other users is assumed to increase by 35% in the next two decades.

The annual passenger forecast for the year 2001 are projected to increase four times over the 1980 levels, based upon estimates prepared by Transport Canada. Only the 50% component of existing traffic generated by Nordair flights will increase in the future; traffic generated by the other uses is assumed to remain constant.

TABLE 2.4
EXISTING HIGHWAY 6 ACCIDENT SUMMARY¹

| | SECTION ³ | | | | | |
|---|----------------------|------|------|------------------|------|------|
| | South of Airport | | | North of Airport | | |
| | 1983 | 1982 | 1981 | 1983 | 1982 | 1981 |
| Number of Accidents | 35 | 26 | 36 | 31 | 30 | 22 |
| Accident Rate ² | 1.7 | 1.3 | 1.8 | 1.3 | 1.3 | 0.9 |
| % Trucks Involved | 11 | 8 | 5 | 3 | 17 | 18 |
| % Intersection or private drive related | 40 | 31 | 28 | 45 | 30 | 50 |
| % Intersection or private drive related (trucks involved) | 6 | 8 | 3 | 0 | 10 | 14 |

NOTES:

1. Source: Ministry of Transportation and Communications
2. Accident rate expressed in number of accidents per million vehicle kilometres. Provincial Average for the year 1981 to 1983 is 1.1 accidents per million vehicle kilometres for King's Highways.
3. Data is not yet available for the Caledonia Bypass.

Trip distribution of the forecasted airport travel is based on an origin-destination survey conducted in Hamilton Civic Airport by Transport Canada. The application of the trip distribution information to the three corridors under assessment is shown in Table 2.5.

The majority of the traffic, approximately 54 to 69%, is destined north to Hamilton, 9% is to the south and 22% is to the northwest via Fiddler's Green Road to Highway 403.

The assignment of airport generated traffic to the various routes are shown on Exhibits 2.2 through 2.7 in Section 2.5, Forecasted Auto Traffic.

TABLE 2.5
DISTRIBUTION OF AIRPORT GENERATED TRAFFIC

| <u>Corridor</u> | <u>Direction</u> | <u>Trip Distribution</u> | | <u>2001 AADT</u> |
|-----------------|------------------|--------------------------|----------|----------------------|
| | | <u>Via Route</u> | <u>%</u> | |
| West | South | Hwy. 6 Old | 9 | 390 |
| | North | Hwy. 6 Old | 54 | 2,320 |
| | N-W | Hwy. 6 (New) | 37 | <u>1,590</u> |
| | | Total | 100 | 4,300 |
| Central | South | Hwy. 6 (New) | 9 | 390 |
| | North | Hwy. 6 (New) | 69 | 2,970 |
| | N-W | Fiddler's Green Rd. | 22 | <u>940</u> |
| | | Total | 100 | 4,300 |
| East | South | Hwy. 6 Old | 9 | 390 |
| | North | Hwy. 6 Old | 39 | 1,670 |
| | N-E | Hwy. 6 (New) | 30 | 1,300 |
| | N-W | Fiddler's Green Rd. | 22 | <u>940</u> |
| | | Total | 100 | 4,300 |

2.4 Truck Traffic

2.4.1 Existing Truck Traffic

This section details the interviews that were conducted with a number of major firms in the Haldimand-Norfolk part of the forecasting study area. These firms were selected to provide a representative profile of industry and trucking operations in the area.

The interviews generated the following information:

i) General Information

- Name
- Type of business
- Size (acres)
- Number of employees
- Employees living in Region
- Time of operation

ii) Trucking Operations

- Type of truck
- Current use of Highway 6
- Importance of trucking
- Existing problem areas

iii) Future Conditions

- Expansion plans
- Effect of Highway 6 (New) on future operations

iv) General Comments

Summary of Interviews

A summary of all information obtained is presented in Table 2.6.

i) General Information

The firms that were interviewed are generally located in the Highway 6 corridor, including Nanticoke, Caledonia, Hagersville, Simcoe, Cayuga, Port Dover and Delhi.

TABLE 2.6
INTERVIEWS - MAJOR FIRMS IN HALDIMAND-NORFOLK

| FIRM | GENERAL INFORMATION | | | | | | TRUCKING OPERATIONS | | | |
|--|--------------------------|--|-----------|------------------|----------------------------|-------------------|--|------------------------------------|------------------------|--|
| | Location | Type of Business | Size (ac) | No. of Employees | Employees Living in Region | Time of Operation | Type of Truck | Current Use of Highway 6 | Importance of Trucking | Existing Problem Areas |
| Bruce R. Smith Ltd. Transport Services | Simcoe | heavy haulage | 15 | 65 | majority | all day | large tractor trailer | minimal- avoids use where possible | very important | - Hwy. 6 - poor road quality - Caledonia Bypass - travel through communities |
| Cronkwright Transport Limited | Simcoe (head operations) | transport general freight | 12 | 50 | majority | all day | large tractor trailer | minimal- avoids use where possible | very important | - Hwy. 6 - poor road quality - Caledonia Bypass |
| Slack Transport Limited | Caledonia | transport general Freight | 26 | 200 | majority | all day | large tractor trailer | heavy useage (majority) | very important | - Hwy. 6 - poor road quality - Caledonia Bypass - travel through communities - Hwy. 20 and Claremont access |
| Verspeeten Cartage Limited | Delhi | transport steel, agricul- tural bulk and general freight | 6 | 60 | majority | all day | large tractor trailer | minimal | very important | - travel through communities - Hamilton mountain access |
| Laidlaw Transport Limited | Hagersville | transport general freight | - | 350 | majority | all day | large tractor trailer | heavy useage | very important | - congestion in Hamilton - Hamilton mountain access - existing roads hard on equipment - Caledonia Bypass |
| McBurney Transport Limited | Hagersville | transport general freight | 7 | 90 | majority | all day | large tractor trailer | heavy useage | very important | - congestion in Hamilton - existing roads hard on equipment - Caledonia Bypass |
| Nelson Steel Company Limited | Nanticoke | pickle steel (clean steel) | - | 34 | majority | all day | - large flat beds - tractor trailer | heavy useage | very important | - Caledonia Bypass - Hwy. 6 is narrow and poorly constructed |

TABLE 2.6
INTERVIEWS - MAJOR FIRMS IN HALDIMAND-NORFOLK
 (continued)

| <u>FIRM</u> | <u>FUTURE CONDITIONS</u> | | <u>GENERAL COMMENTS</u> |
|---|---|--|---|
| | <u>Expansion Plans</u> | <u>Effect of Highway 6 (New) on Future Operations</u> | |
| Bruce R. Smith Ltd. Transport Services | - plans expansion to U.S.A. - will expand with Lake Erie Industrial Park, Stelco in particular | - would improve their service to Hamilton and beyond | - prefer eastern Hwy. 6 (New) route to proposed Red Hill Creek Parkway and industrial areas of Hamilton and Stoney Creek |
| Cronkwright Transport Limited | - plans expansion | - would improve their service to Hamilton and beyond | - prefer eastern Hwy. 6 (New) route to proposed Red Hill Creek Parkway to serve industrial areas of Hamilton and Stoney Creek |
| Slack Transport Limited | - definite expansion plans - maintain historical (20-25%/year) growth | - better service - increased safety - decrease maintenance costs | - prefer central Hwy. 6 (New) route providing access to highway 403 and the QEW |
| Verspeeten Cartage Limited | - will expand with local economy | - will make expansion of company to the Nanticoke market area easier | - due to geographic location (Delhi) of company most business to Hamilton and beyond travels on Highway 24 and 403 |
| Laidlaw Transport Limited | - anticipate growth primarily in gypsum transportation | - access to 403 would improve their service | - Bypass should have been four lanes - poor connection at both ends of bypass |
| McBurney Transport Limited | - will grow with economy - increase in trips to the U.S.A. | - would improve their service to Hamilton and beyond | - built Bypass for the wrong size of truck - Bypass should be main corridor - Bypass should go south of hydro |
| Nelson Steel Company Limited | - will grow as Stelco grows (primarily serving Stelco) | - would improve overall operations | - Hwy. 6 is very important for inbound traffic. Outbound traffic has alternatives |

TABLE 2.6
INTERVIEWS - MAJOR FIRMS IN HALDIMAND-NORFOLK
(continued)

| FIRM | GENERAL INFORMATION | | | | | | TRUCKING OPERATIONS | | | |
|-------------------------------|---------------------|----------------------------------|--|------------------|--|---------------------------|------------------------------------|-----------------------------------|-------------------------------|---|
| | Location | Type of Business | Size (ac) | No. of Employees | Employees Living in Region | Time of Operation | Type of Truck | Current Use of Highway 6 | Importance of Trucking | Existing Problem Areas |
| Air Products | Nanticoke | produce liquid oxygen & nitrogen | 14 | 50 | - majority live in Hamilton | all day-majority at night | large tankers with tractors | avoids where possible | very important | - time consuming to transport products - poor lighting on Hwy. 6 - congestion in Hamilton |
| Stelco | Nanticoke | steel manufacturer | 6600-total 1800-in use 2500-at industrial park | 1400 | - majority live in Region - some management in Hamilton | all day | all varieties | heavy useage and volume | very important and increasing | - access to Nanticoke is poor in general - affects ability to sell industrial land |
| Domtar Construction Materials | Caledonia | mine and process gypsum | - | 350 | - most in the Region - many in Hamilton and Brantford | all day | tractor trailers (mostly Slack) | heavy useage | very important | - crossing Hwy. 6 |
| Standard Aggregates | Hagersville | aggregate producer and supplier | 200 | 20 | majority | daily | large bucket trailers and tractors | majority of trips south on Hwy. 6 | very important | - Caledonia Bypass - Hwy. 6 is too narrow |
| Cayuga Aggregate and Hauler | Simcoe & Cayuga | aggregate producer and supplier | 500-Cayuga 100-Simcoe | 100 | majority | daily | large bucket trailers and tractors | minimal | very important | - avoid Hwy. 6 when possible - Bypass a problem |
| Ivey's Inc. | Port Dover | wholesale florists | 62 | 115 | majority | daily | small & large tractor trailers | extensive | very important | - congestion on Hwy. 6 - truck access in general is poor - Caledonia Bypass |
| Texaco Canada Inc. | Jarvis (Nanticoke) | gas refinery and distribution | - | 330 | majority | all day | tankers with tractors | extensive | very important | - Caledonia Bypass - congestion on Hwy. 6 - congestion in Hamilton |

A variety of services and/or products provided by these companies include:

- steel production
- transportation
- mining (gypsum, sand, gravel)
- refining

The number of employees at these firms ranges from 20 at Standard Aggregates to 1400 at Stelco. Most (8 of 14) employ under 100 persons.

A majority of the firms are highly specialized and skilled at what they do; they are technologically oriented.

In all cases, a majority of the employees at these firms live within the Regional Municipality of Halimand-Norfolk. However, it was noted that management staff tend to live in Hamilton and commute.

A majority of the firms operate on a 24 hour basis with some doing business only during normal daytime working hours.

ii) Trucking Operations

A majority use large tractor-trailer types of trucks including buckets, flatbeds and tankers.

A majority currently use the Highway 6 corridor and state that trucking is a vital part of their operations.

A number of problem areas were cited by those interviewed and they are as follows:

- too much time required to transport goods along the existing Highway 6 corridor;
- poor access from Nanticoke to the Provincial freeway system;
- Caledonia Bypass operational problems;
- congestion in Hamilton and other communities;
- Highway 20 and the Claremont mountain access, safety and operational problems.

iii) Future Conditions

Most of the firms interviewed indicated that they have plans to expand. In general, however, that expansion will be predicated by growth in the overall economy. At Stelco, the largest employer interviewed, there has been steady but slow growth and this has resulted in a "cautiously optimistic" outlook by Stelco officials.

Most of those interviewed believe that a new Highway 6 facility would improve their current and future operations. Generally, a new facility would reduce travel time and improve service capabilities.

iv) General Comments

A number of general comments were recorded. These were not directly related to any of the questions asked.

The comments made most often are as follows:

- many truckers try to avoid Highway 6 where possible;
- access to Nanticoke should be improved because it is vital to the economic development of the area;
- improvements are required to the Caledonia Bypass;
- the slowdown of growth in Nanticoke can, at least in part, be attributed to poor Provincial Highway access.

2.4.2 Forecasted Truck Traffic

Truck volume forecasts for the year 2001 were based on existing truck volumes factored by the changes in employment levels. These volumes were assigned to the different corridors based on the Truck Origin-Destination survey conducted by the Ministry of Transportation and Communications (MTC) in June 1984.

The majority of truck traffic consists of comparatively long distance trips. These are from south of Caledonia to the industrial region of Hamilton and also to points beyond Hamilton.

The majority of this truck traffic was assigned to Highway 6 (New). Since this routing provides good access to the freeway system it would

facilitate long distance trips. In addition, the trips bound for Hamilton's industrial area would be able to avoid the congestion experienced through central Hamilton. The remaining truck traffic on "old" Highway 6 would be shorter distance trips serving local needs.

Forecasted year 2001 truck volumes are shown on Exhibits 2.2 through 2.7.

2.5 Forecasted Auto Traffic

2.5.1 Highway Network

The MOTORS microcomputer transportation planning package was employed to produce year 2001, 24 hour automobile traffic assignments. The MTC Demand Forecasting Office provided an isolation within the forecasting study area of the COR-B highway network. In addition to the existing Provincial highways and Regional roads the network included the following major future roads:

- the North-South Parkway, East-West Arterial;
- the Highway 403 Extension to Brantford and Woodstock;
- the Hamilton Industrial Perimeter Road.

Modifications were made to the network to adapt it to the MOTORS format. This included renumbering the zones and nodes.

2.5.2 Trip Table

The MTC Demand Forecasting Office supplied a COR-B Year 2001 trip table compressed to 97 zones to represent the forecasting Study Area. This trip table was used as a base to generate two new trip tables, one for "anticipated growth" and one for "high growth".

For the new trip tables, trip production and attraction data, and gateway volumes were produced for both scenarios. The productions and attractions represent the number of trips exiting (produced) and entering (attracted) a zone. The gateways allow for trips to and from the areas external to the forecasting Study Area.

Trip productions and attractions were calculated for the two scenarios based on the population and employment forecasts developed in Section 4, Part I of this report. A trip generation equation was developed based on a regression analysis of trips vs. land use data for

these internal zones. Gateway volumes were produced for the year 2001 based on forecasts obtained from road needs studies inventory sheets, the reports prepared for the North-South Parkway, East-West Arterial, and an analysis of historical trends.

Gateway volumes for Hamilton-Wentworth roadways were reviewed with the Region and were found to be consistent with projections produced for the North-South Parkway, East-West Arterial.

Using the calculated zonal trip productions and attractions (internal zones) and traffic forecasts for gateways (external links) as inputs, the 97 zone isolated trip table was iterated using the Fratar method to produce two trip tables, one for "anticipated growth" and one for "high growth". These trip tables were then used as input to the MOTORS highway network for Highway 6 (New) to produce assignments to the three corridors studied.

2.5.3 Assignments

Three alignment options were considered for analysis, the Central, East and West corridors. A Do Nothing assignment was also conducted for the existing Highway 6 corridor. Assignments were conducted for the "anticipated growth" and "high growth" population and employment scenarios. Minor adjustments were made to these assignments to reflect trip patterns based on the origin-destination survey conducted by MTC in June 1984. Further modifications to the assignment were made using a compressed trip table of the study area. This involved converting the study area into nine districts. Adjustments were then made based on the major movements at the district level.

Two screenlines were created in the study area, one south of the airport and one north of the airport. The screenline volumes obtained for each scenario and corridor provided a basis for comparison between alternatives. Screenline checking ensured that all trips were accounted for in each corridor.

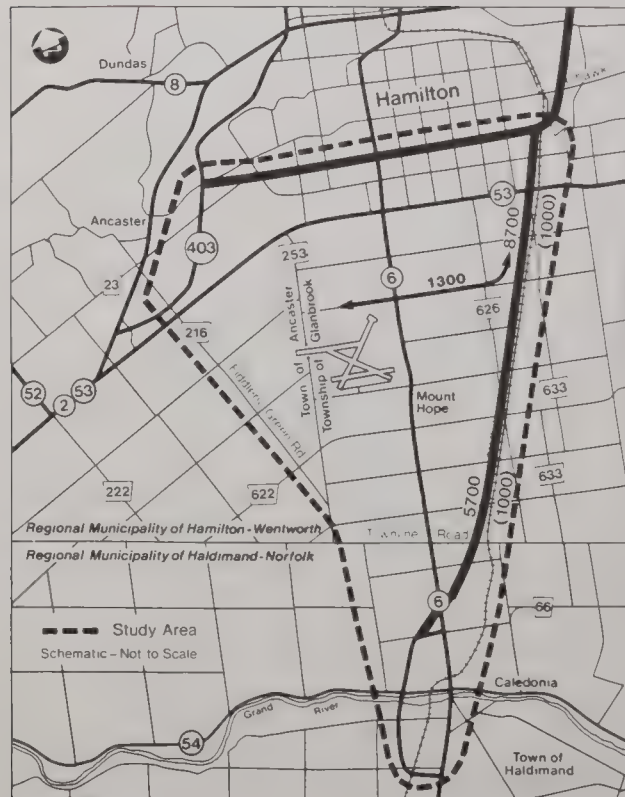
All assignments assumed that the North-South Parkway and the East-West Arterial were constructed. Other facilities or improvements assumed to be in place were the Highway 403 extension to Brantford, the Hamilton Industrial Perimeter Road, including the upgrading of Burlington Street in Hamilton.

The major trip movements and changes to existing patterns were found to be:

Highway 6 (New)

ROUTE LOCATION
PRELIMINARY DESIGN STUDY

Exhibit 2.2
Year 2001 Volumes
East Corridor
Anticipated Growth



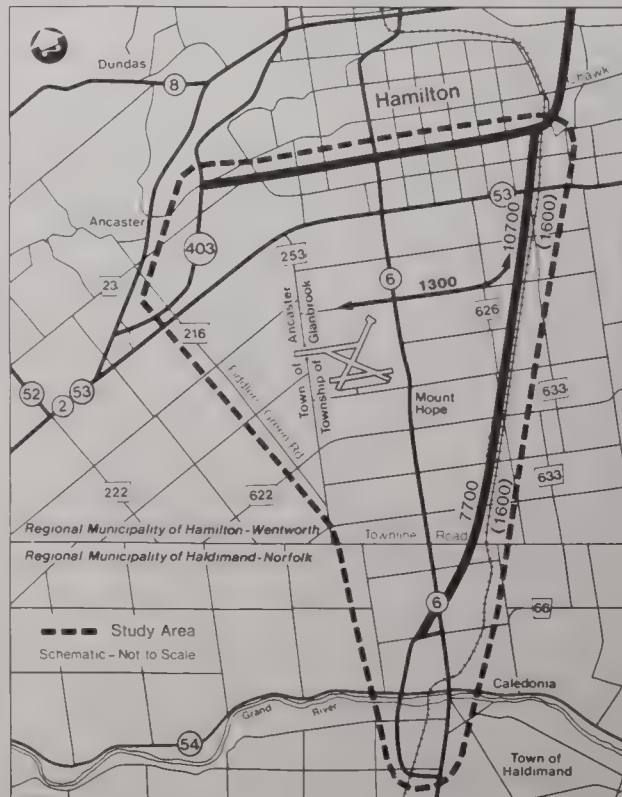
Legend: AADT xxxx
TRUCKS (xxxx)

DILLON

Highway 6 (New)

ROUTE LOCATION
PRELIMINARY DESIGN STUDY

Exhibit 2.3
Year 2001 Volumes
East Corridor
High Growth



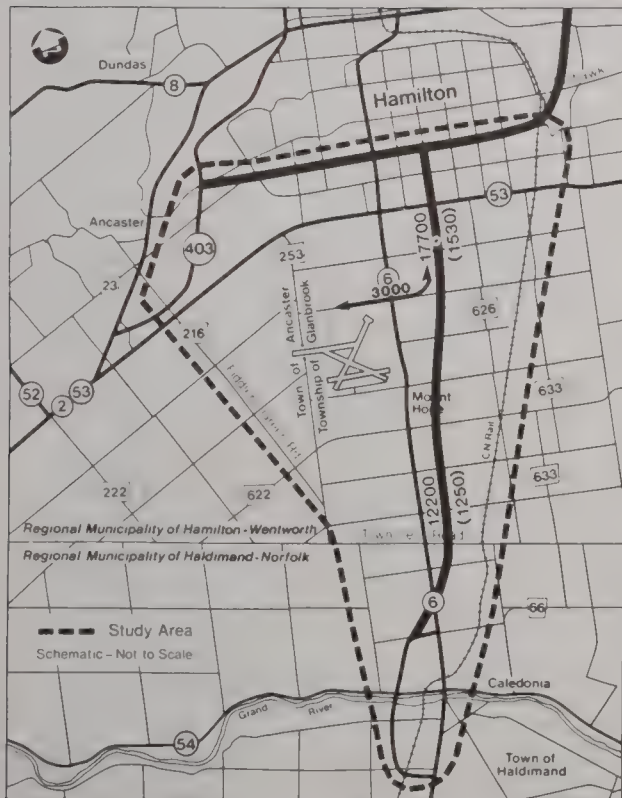
Legend: AADT xxxx
TRUCKS (xxxx)

DILLON

Highway 6 (New)

HAMILTON TO CALEDONIA
ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Exhibit 2.4
Year 2001 Volumes
Central Corridor
Anticipated Growth



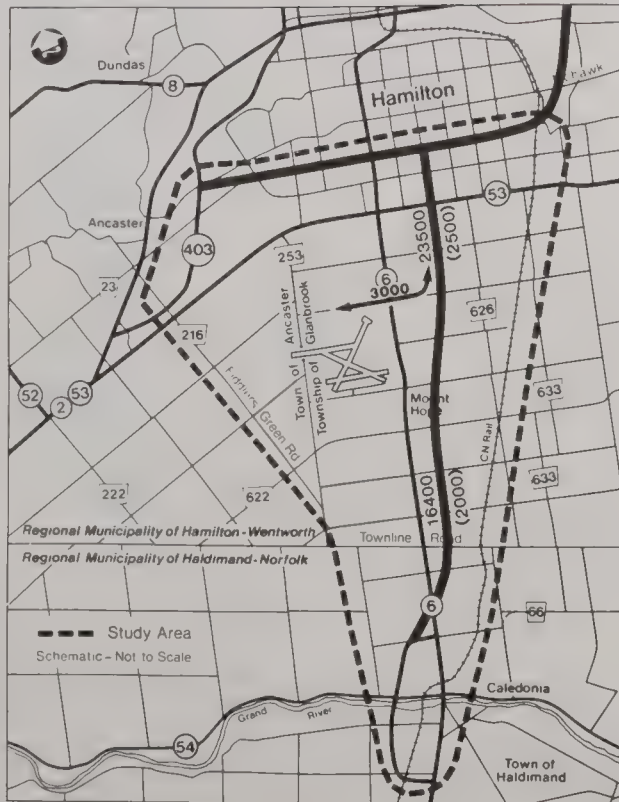
Legend: AADT xxxx
 TRUCKS (xxxx)

DILLON

Highway 6 (New)

HAMILTON TO CALEDONIA
ROUTE LOCATION & PRELIMINARY DESIGN STUDY

Exhibit 2.5
Year 2001 Volumes
Central Corridor
High Growth



Legend: AADT xxxx
 TRUCKS (xxxx)

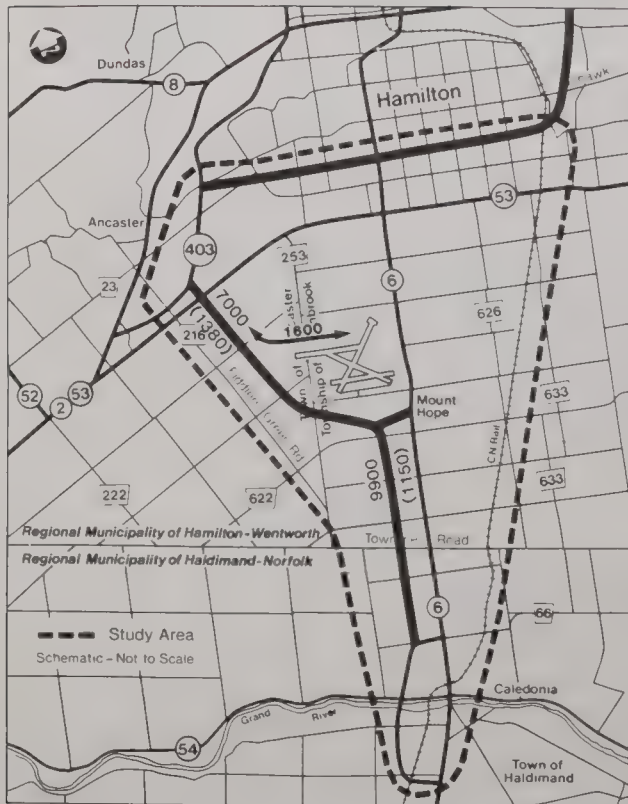
DILLON

Highway 6 (New)

Year 2001 Volumes
West Corridor
Anticipated Growth

Exhibit 2.6

Year 2001 Volumes
West Corridor
Anticipated Growth



Legend: AADT (xxxx)
TRUCKS (xxxx)

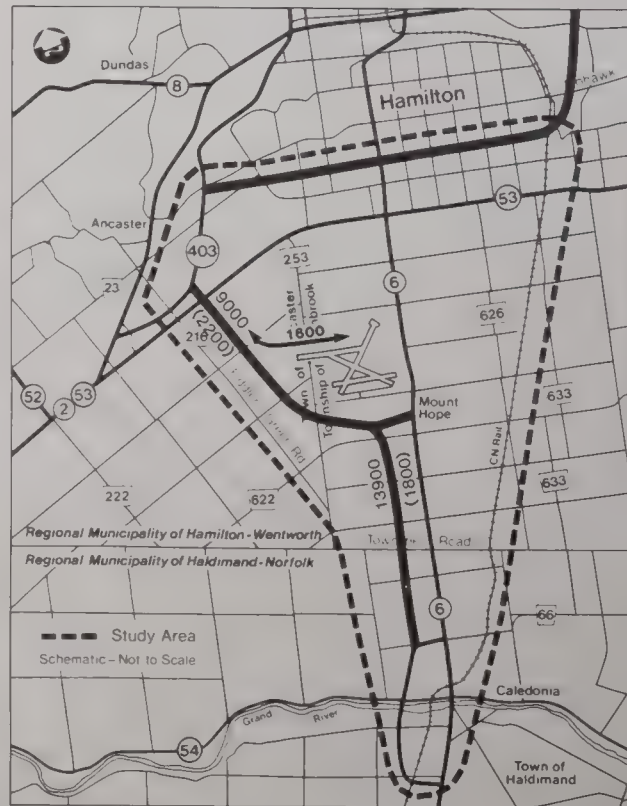
DILLON

Highway 6 (New)

Year 2001 Volumes
West Corridor
High Growth

Exhibit 2.7

Year 2001 Volumes
West Corridor
High Growth



Legend: AADT (xxxx)
TRUCKS (xxxx)

DILLON

- the main travel desire is from Caledonia and areas to the south, along the existing Highway 6 corridor to Hamilton mountain area and lower Hamilton;
- the North-South Parkway and East-West Arterial carry long distance trips from Caledonia and areas to the south to Highway 403 and the QEW with the East and Central corridors;
- the gateway volumes were developed on the basis that the North-South Parkway and the East-West Arterial offload the existing mountain access routes allowing trips from the Highway 6 central corridor to access the lower Hamilton areas. The offloading allows the existing mountain access routes to provide approximately the present level-of-service in the year 2001.

The year 2001 assignments are shown on Exhibits 2.2 through 2.7 and on Table 2.7. All assignments and forecasting methodologies were reviewed by, and carried out in conjunction with, the MTC Demand Forecasting Office.

TABLE 2.7
CORRIDOR TRAFFIC PROJECTIONS

| | West | | Central | | East | |
|----------------------------------|--------|----------------------|---------|----------------------|--------|----------------------|
| | | % Commer- cial | | % Commer- cial | | % Commer- cial |
| "Anticipated" Growth - | | | | | | |
| Forecasted Year 2001 AADT | | | | | | |
| North of Airport | 7,000 | 20 | 17,700 | 9 | 8,700 | 11 |
| South of Airport | 9,900 | 12 | 12,200 | 10 | 6,700 | 17 |
| "High" Growth - | | | | | | |
| Forecasted Year 2001 AADT | | | | | | |
| North of Airport | 9,000 | 24 | 23,500 | 11 | 10,700 | 15 |
| South of Airport | 13,900 | 13 | 16,400 | 12 | 7,700 | 21 |

The highest volumes are forecasted for the Central Corridor, followed by the West with the East Corridor having the lowest volumes. The highest forecast is 23,500 vpd, north of the airport on the Central Corridor under the "high" growth scenario.

Both the Central and East Corridors have higher volumes north of the airport than to the south. The West Corridor however, has the lower volume north of the airport. Immediately south of the airport, traffic destined to the Hamilton mountain area and most of lower Hamilton switches to old Highway 6. Traffic remaining on Highway 6 (New) north of the Airport is travelling to Brantford and areas west of Hamilton, Ancaster, Dundas and long distance trips to Burlington and beyond.

2.5.4 Future Level-of-Service

The future design hourly volumes and resulting levels-of-service are shown for the three corridors, north and south of the airport in Table 2.8. The level-of-service assumes a four-lane arterial roadway with at-grade intersections. Although Highway 6 (New) will ultimately be a full freeway, it was assumed that the initial stage four-lane arterial facility will probably be in place in the year 2001.

TABLE 2.8
FUTURE DESIGN HOURLY VOLUMES (DHV)
AND RESULTING LEVEL-OF-SERVICE (L-of-S)
(Four-Lane Arterial)

| | West | | Central | | East | |
|------------------------------------|------|--------|---------|--------|------|--------|
| | DHV | L-of-S | DHV | L-of-S | DHV | L-of-S |
| Corridor Anticipated Growth | | | | | | |
| North of Airport | 760 | C | 1910 | D | 940 | C |
| South of Airport | 1070 | C | 1320 | C | 620 | C |
| Corridor High Growth | | | | | | |
| North of Airport | 970 | C | 2540 | D | 1160 | C |
| South of Airport | 1500 | C | 1770 | D | 830 | C |

2.5.5 Highway 403 Impacts

To evaluate the impacts of Highway 6 (New) on Highway 403, the MTC Transportation Demand Forecasting Office conducted assignments to Highway 403 for each of the alternative corridors. The contribution of traffic, from Highway 6 (New) to Highway 403 on the escarpment, for each corridor is as follows:

| | |
|------------------|------------|
| East Corridor | 1,000 AADT |
| Central Corridor | 3,500 AADT |
| West Corridor | 4,000 AADT |

Thus, Highway 6 (New) would contribute between 1,000 and 4,000 vehicles per day to Highway 403 on the escarpment. This results in a design hourly volume (DHV) of between 70 and 280 vehicles per hour, two way.

The year 2001 Anticipated Growth forecast for Highway 403 on the escarpment, the design hourly volume (DHV) and level of service with the existing three lanes and future four lanes (up the escarpment) are shown in Table 2.9.

This analysis indicates that on the Highway 403 critical section (up the escarpment) the existing three lanes will be at capacity by the year 2001 assuming the anticipated level of growth in the area. Level of service "D" will be reached if four lanes are provided up the escarpment.

TABLE 2.9
LEVEL OF SERVICE
HIGHWAY 403 UP THE ESCARPMENT

| Corridor | AADT | DHV | Level of Service | |
|----------|--------|-------|---------------------|-------------------|
| | | | Existing 3 Lanes | Future 4 Lanes |
| Existing | 27,500 | 1,940 | D | N/A |
| West | 51,000 | 3,600 | E | D |
| Central | 50,500 | 3,570 | E | D |
| East | 48,000 | 3,400 | E | D |

However, the analysis also indicates that Highway 6 (New) is not a major factor in the level of service provided by the Highway 403 up the escarpment.

2.6 Do Nothing Alternative

Exhibits 2.8 and 2.9 show the year 2001 Do Nothing forecasted AADT volumes on Existing Highway 6. Also shown in brackets are the forecasted year 2001 truck volumes. The truck volumes are included in the AADT forecast.

Under the "high" growth scenario there will be an AADT of 29,400 vpd on Highway 6 south of Highway 53. This volume drops to 20,100 vpd south of the airport. The corresponding volumes with the anticipated growth scenarios are 22,400 vpd south of Highway 53 and 15,100 vpd south of the airport.

Level of service 'F' will result north of the airport with the existing four lanes under the "high" growth scenario. Level of Service 'D' will result with the "anticipated" growth scenario.

South of the airport, Level of Service 'D' will result under both scenarios.

The future AADT and DHV volumes and the resulting levels of service are shown on Table 2.10

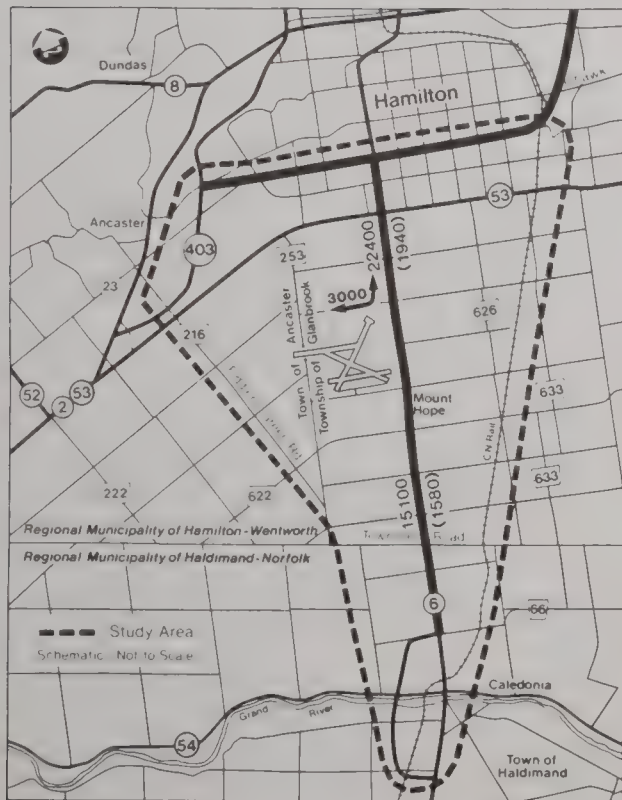
TABLE 2.10
HIGHWAY 6 LEVEL OF SERVICE DO NOTHING

| Scenario | AADT | DHV | Level of Service 4 Lanes |
|------------------|--------|-------|-----------------------------|
| Anticipated | | | |
| North of Airport | 22,440 | 2,430 | D |
| South of Airport | 15,080 | 1,630 | D |
| High | | | |
| North of Airport | 29,400 | 3,175 | F |
| South of Airport | 20,120 | 2,175 | D |

Highway 6 (New)

Exhibit 2.0
Year 2001 Volumes
Do Nothing
Anticipated Growth

NOT TO SCALE
PRELIMINARY DESIGN STUDY



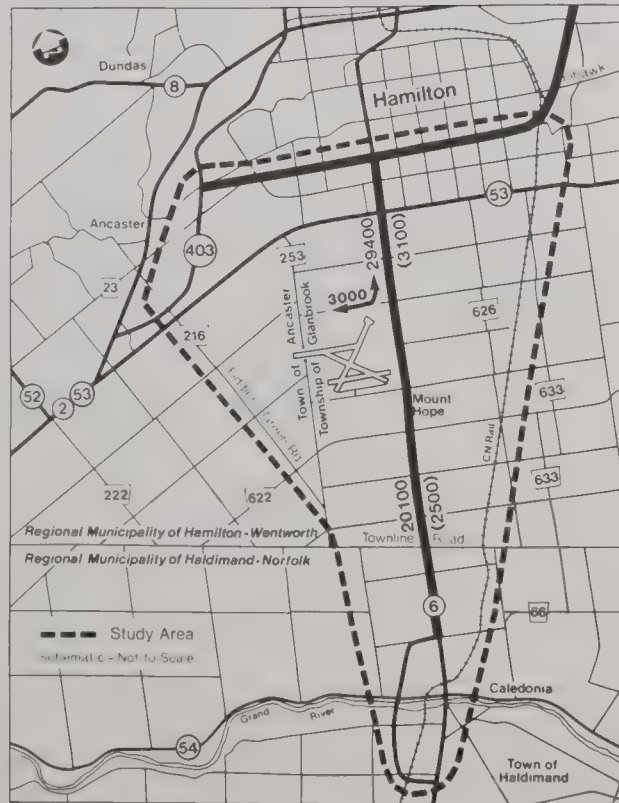
Legend: AADT TRUCKS (xxxx)

Dillon

Highway 6 (New)

Exhibit 2.0
Year 2001 Volumes
Do Nothing
High Growth

NOT TO SCALE
PRELIMINARY DESIGN STUDY



Legend: AADT TRUCKS (xxxx)

Dillon

3. Preliminary Design Alternatives

3.1 Introduction

The Environmental Assessment Report for the Highway 6 (New) documents the comparative evaluation of alternative corridors, alternatives rejected after preliminary analysis, and the viable route alignment alternatives.

This section documents the comparative evaluation of design related alternatives for the Recommended Alignment. These include the Highway 403 interchanges, the Book Road crossing, the White Church Road area, an alignment along Airport Road, and cross section alternatives.

3.2 Highway 403 Interchange Alternatives

Five alternatives were examined for the interchange between Highway 403 and Highway 6 (New). The alternatives provide for all movements between Highway 6 (New) and Highway 403 by fully directional ramps. The schemes are shown in Exhibit 3.1, numbered 1 through 5.

Scheme 1

This is the simplest and least expensive interchange alternative considered. The east to south and south to west ramps are able to offer comparatively high speed operation (80-100 km per hour). The south to east and the east to south ramps require considerably lower speeds (50-70 km per hour).

Structures are required over Highway 403, the basket-weave for the east to south ramp and the east to east-west ramp at Highway 53, and over Highway 53.

Ramps are provided to and from the east on Highway 403 to Highway 53. These ramps are intended to offload the Fiddler's Green Road interchange and to provide additional traffic service for the development of the Scenic Woods residential development along Highway 53 east of Southcote Road. (These ramps are common to all alternatives considered.)

Scheme 2

This scheme is essentially the same as scheme 1 with the exception that the east to south ramp provides for 100 km per hour design speed. The majority of traffic, approximately 70%, from Highway 6 (New) is expected to travel to and from the east on Highway 403. Therefore, this alternative favours the major traffic movements.

In order to provide this higher design speed on the east to south movement, a longer, skewed structure is required over Highway 403 and additional structures are required for the east to south ramp over the south to west ramp and an additional structure is required at Highway 53 for the west to south ramp.

Thus to favour the major traffic demand to and from the east on Highway 403 requires two additional structures and one longer, skewed structure over Highway 403 over that provided by scheme 1.

Scheme 3

Scheme 3 is essentially the same scheme as 2 with the exception that the movement from the south on Highway 6 (New) to the west on Highway 403 is a "right-hand" take-off rather than a "left-hand" take-off as in scheme 2.

The right-hand take-off is based on the principle that the minor movement leaving the freeway should be from the right-hand side.

In order to provide for the right-hand take-off, an additional structure is required over Highway 53, between the south to west and east to south movement, over that provided for scheme 2.

Scheme 4

With scheme 4 the inner loop for the south to west ramp is replaced with an 80 km per hour directional ramp. In order to provide for this ramp, a basket-weave is required between the south to west ramp and the westbound off ramp for the Fiddler's Green interchange. In addition, the structure over Highway 403 is longer and skewed. The ramp for the westbound off movement to Fiddler's Green is extended a considerable distance and must pass under both the south to west ramp and the east to south ramps for Highway 6 (New).

Thus to provide for this higher speed movement to the west on Highway 403 requires an additional basket-weave structure, a longer skewed structure over Highway 403, and a considerably longer westbound off-ramp to Fiddler's Green Road over that provided by scheme 2.

Scheme 5

Scheme 5 offers the highest level of traffic service of all interchanges evaluated. It offers high speed directional ramps for all movements using at least 90 km per hour design speeds. In addition, the movement from the south on Highway 6 (New) to the west on Highway 403 is a right-hand take-off.

In order to provide for 90 km per hour for the west to south ramp a basket-weave is required between the west to south ramp and the eastbound on ramp from Fiddler's Green Road.

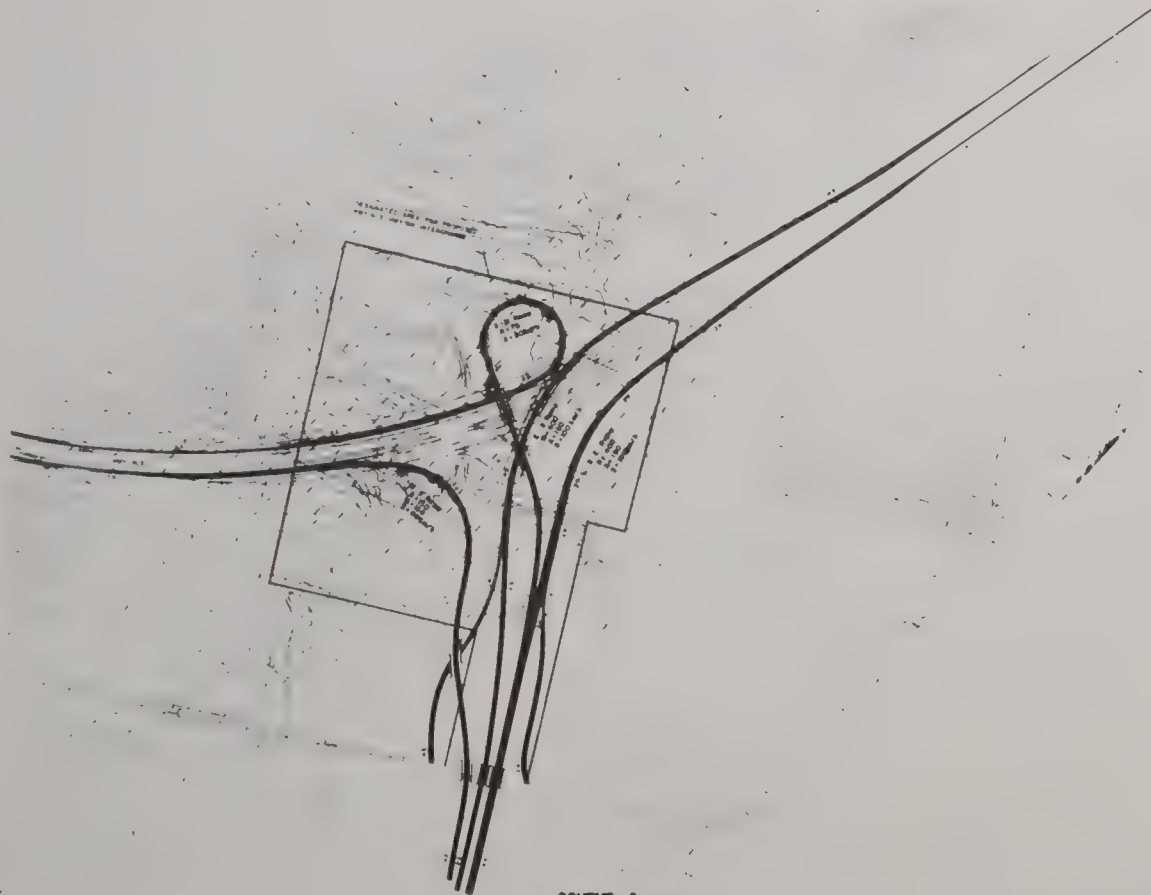
In comparison to scheme 4, an additional structure is required over Highway 53, another structure is required between the south to east and south to west ramp to allow for the right-hand take-off and the west to south and eastbound on ramp at Fiddler's Green requires a structure for the basket-weave.

Comparison of Highway 403 Interchange Alternatives

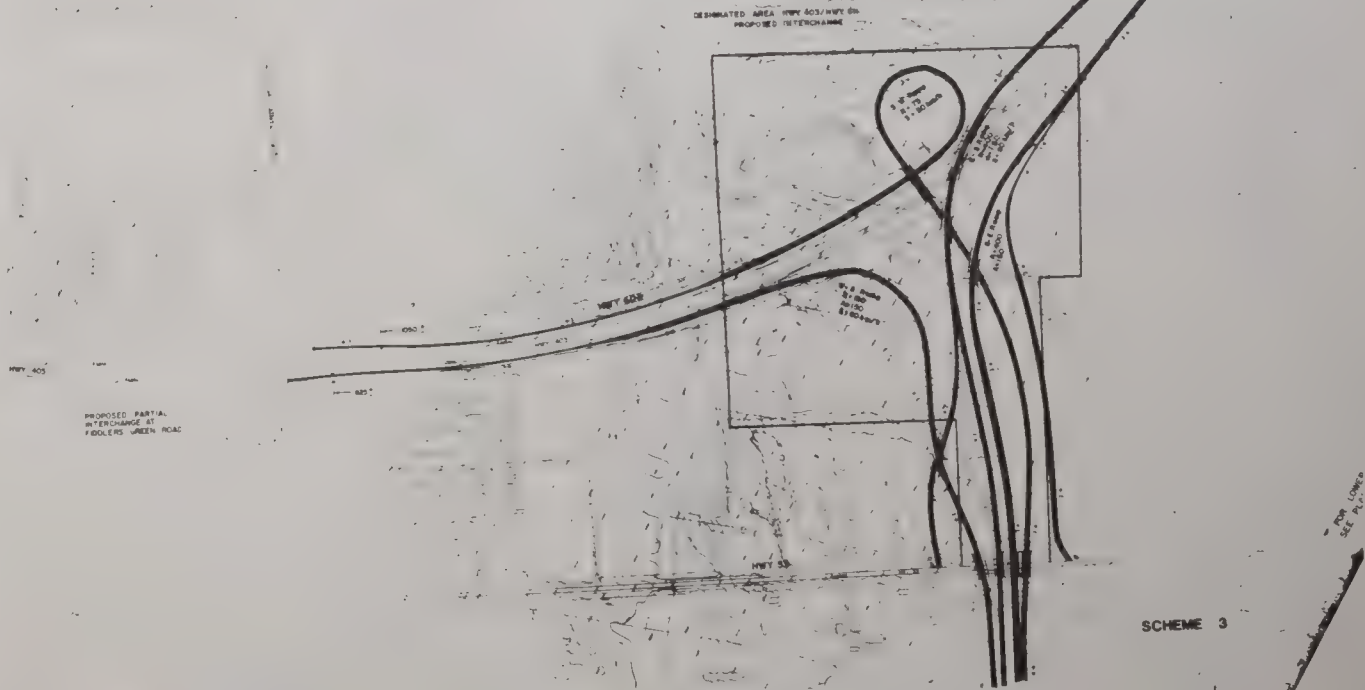
Highway 6 (New) will terminate at Highway 403. Therefore, it was felt unnecessary to provide for a right-hand take-off for the south to west ramps. Traffic wishing to travel to the west on Highway 403 will more logically expect a left-hand exit rather than a right-hand. Therefore, the extra costs associated with scheme 3 and 5 cannot be justified and they have therefore been eliminated.

It is expected that 70% of the traffic from Highway 6 (New) will travel to and from the east on Highway 403. Therefore, the ramps to and from the west on Highway 403 will serve relatively low traffic volumes. Thus, there is little justification for the additional cost of high speed ramps for movement to and from the west. Therefore scheme 4 was eliminated.

In comparing schemes 1 and 2, the major difference is the higher design speed provided by the east to south ramp for scheme 2. A 100 km per hour speed is offered with scheme 2 versus 70 km per hour speed with scheme 1. However, to provide this improved standard requires a longer skewed structure over Highway 403, an additional structure between the



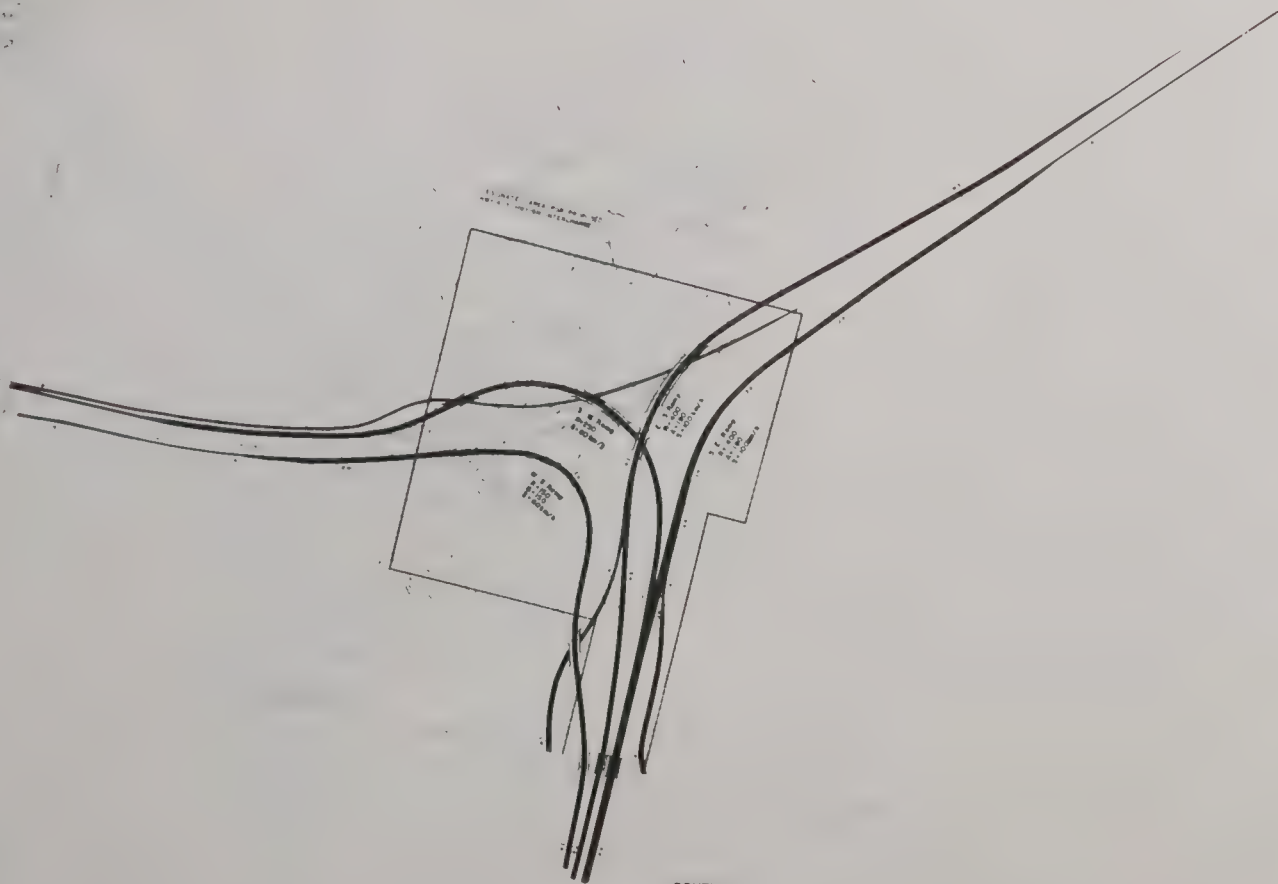
SCHEME 2.



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

Scheme 3



Highway 6 (New)

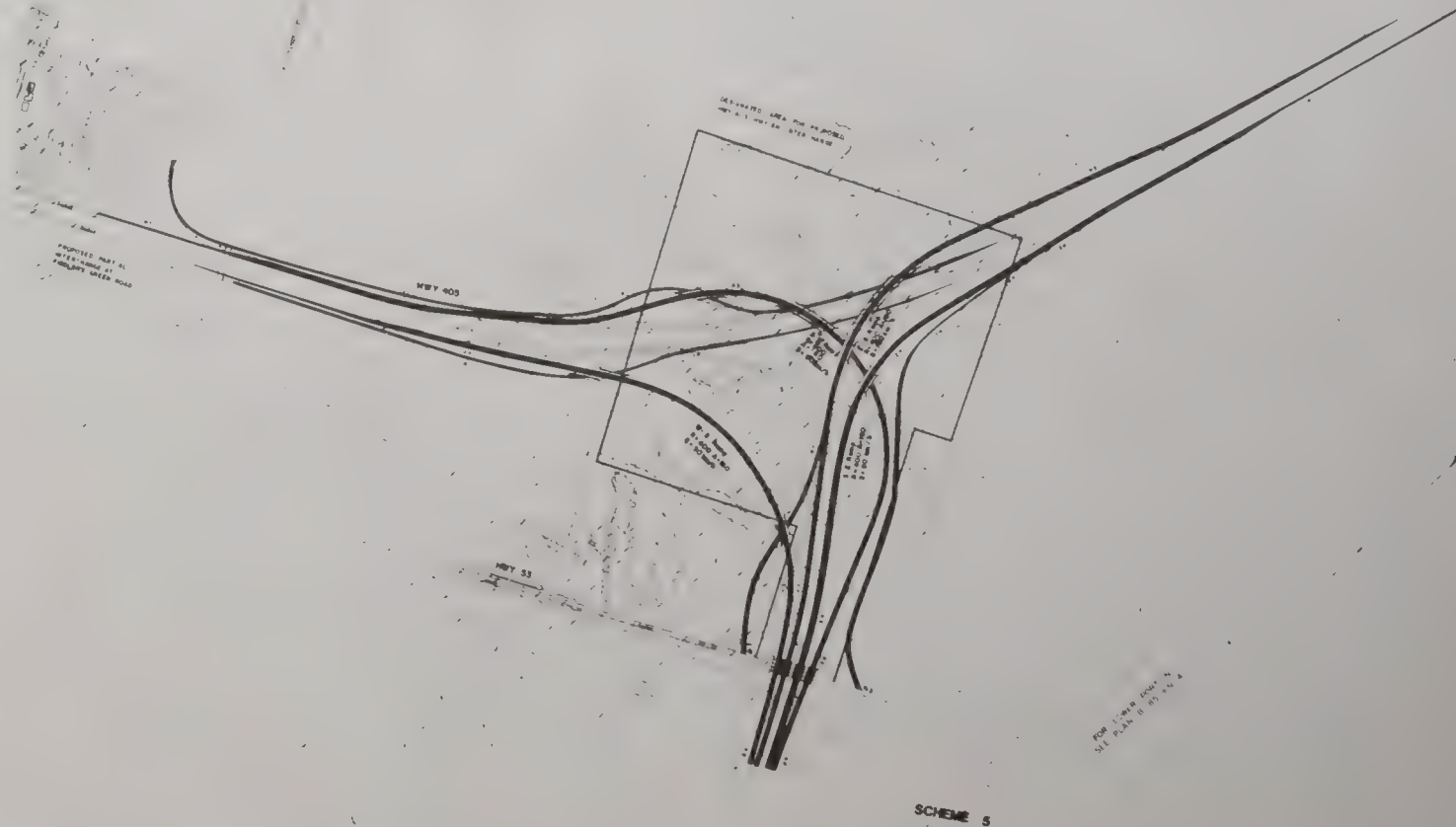
HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

Environmental Assessment & Preliminary Design Report

Exhibit 1

Scheme 4



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

east to south and south to west ramps, and an additional structure over Highway 53. It was decided that the additional speed provided by scheme 2 did not justify the cost of the three additional structures. Therefore scheme 1 was selected as the preferred interchange alternative. This decision was confirmed at the Study Progress meeting of 10 April 1985. Scheme 1 was employed for all subsequent analysis and Regional presentations.

3.3 Book Road Crossing

Through discussions with External Team members and the public at the first series of Public Information Centres, many constraints and controls were identified at the Book Road crossing. Consequently, a detailed analysis of alternative interchanges at Book Road and Highway 6 (New) was carried out.

The controls and constraints at the Book Road crossing contributed to it being an Environmentally Significant Area for the purposes of this Study. These consist of:

1. The navigation, lighting, and zoning requirements of the recently expanded Hamilton Civic Airport.
2. A 230 KV hydro line which has recently been lowered at the end of Runway 12L to accommodate the Airport's zoning requirements. This 230 KV line is immediately south of the crossing of Book Road.
3. The Ancaster Animal Cemetery which lies directly opposite the existing MTC designation at Book Road.
4. An abandoned historic human cemetery (the Parkin Cemetery) on the north side of Book Road immediately west of the MTC designation.
5. Two historically significant houses immediately west of the MTC designation, just north of Book Road.
6. Several residences in the immediate vicinity.
7. Several large viable farms in the area, some with specialty crops.

Three alternatives to the Book Road interchange with Alignment A were developed, these are referred to as A1, A2, and A3 and are shown in Exhibit 3.2.

Table 3.1 shows a comparison between Alternatives A1, A2, and A3 at Book Road. The comparative evaluation focusses primarily on design criteria, impacts and cost because the service provided by the three alignments is essentially the same.

In evaluating A1, A2 and A3, Alternative A3 was successively compared to Alternatives A1 and A2. Compared to Alternative A1, Alternative A3 had greater impacts, particularly with respect to residences and the cemeteries, greater costs, and offered much less flexibility and poorer highway geometrics. In comparison to Alternative A2, Alternative A3 had greater impacts with respect to the cemeteries, greater costs, and offered no advantages over Alternative A2 in terms of its geometrics and flexibility. Accordingly, Alternative Alignment A3 was rejected.

Alternative A2 was evaluated in comparison to Alternative A1, A2 had greater impacts, particularly with respect to residences, somewhat greater costs, and offered poorer geometrics and far less flexibility. Thus, Alternative A2 was rejected in favour of Alternative A1.

Alternative A1 was selected largely on the basis that it provided the best highway geometrics and the greatest flexibility in meeting Transport Canada's long-term requirements and avoiding conflicts with Ontario Hydro. It requires the removal of only one residence and leaves the Pet Cemetery unaffected. The Parkin Cemetery is unaffected and remains within the interchange lands. A heritage feature, the Book House is indirectly affected by the removal of the barn, but the barn removed is not, in itself, of any great historical significance as it was constructed in the 1950s. Alternative A1, however, has marginally greater agricultural impacts and marginally greater impacts to the natural environment.

3.4 Airport Road Alignment

Following the first series of Public Information Centres, a local resident suggested an alignment for Highway 6 (New) using a portion of Airport Road west of Mount Hope. This alternative is shown on Exhibit 3.3. Generally, alignments along existing roadways are not feasible as they require the removal of numerous private accesses and therefore create significant property damage. However, Airport Road has only a few access points in this area and thus warranted further study.

The following documents the comparative evaluation of Alignment A1 including the east-west portion along the mid-lot line between Airport

FIDDLERS GREEN ROAD

BOOK ROAD

HIGHWAY 63

230 kV HYDRO

PARKIN CEMETERY

PET CEMETERY

230 kV HYDRO

230 kV HYDRO

230 kV HYDRO

SOUTHCOLE ROAD

HAMILTON CIVIC AIRPORT

Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



0 100 200 m

Residential Cemetery
Buildings of Heritage Importance (historic, aesthetic)

Airport Property Boundary
Highway 6 New Designated Section
Hydro

Exhibit 3.2(a)

Book Road Crossing.
Alternative Alignment A1

FIDDLERS GREEN ROAD

BOOK ROAD

HIGHWAY 53

230 kV HYDRO

PET CEMETERY

PARKIN CEMETERY

230 kV HYDRO

230 kV HYDRO

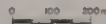
230 kV HYDRO

SOUTHCOTE ROAD

HAMILTON CIVIC AIRPORT

Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



Residential
Cemetery
Buildings of Heritage Importance (historic, aesthetic)

--- Airport Property Boundary
- - - Highway 6 New Designated Section
— Hydro

Exhibit 3.2(b)

Book Road Crossing.
Alternative Alignment A2



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



0 100 200m



Residential Cemetery
Buildings of Heritage Importance (historic, aesthetic)



Airport Property Boundary
Highway 6 New Designated Section
Hydro

Exhibit 3.2(c)

Book Road Crossing.
Alternative Alignment A3

TABLE 3.1
COMPARISON BETWEEN ALTERNATIVES A1, A2 AND A3 AT BOOK ROAD

| | ALTERNATIVE ALIGNMENTS from midway between Highway 53 and Book Road to midway between Book Road and Butter Road | | |
|---|---|----------------------------------|---|
| | A1 | A2 | A3 |
| <u>PROPERTY</u> | | | |
| Number of Residences Taken | 1 | 2 | 1 |
| Number of Residential Properties Affected | 0 | 0 | 2 |
| Pet Cemetery | unaffected | access road required | removed |
| Parkin Cemetery | within interchange lands | unaffected | proximity impacts |
| <u>HERITAGE</u> | | | |
| Other Heritage Features Affected | Barn on farmstead 116a removed | none | none |
| <u>AGRICULTURE</u> | | | |
| Area of Class 1 to 3 Land by Class: | | | |
| 1 | 3.4 ha | 1.8 ha | 2.2 ha |
| 2 | 3.6 ha | 7.2 ha | 4.8 ha |
| 3 | 20.1 ha | 18.1 ha | 20.1 ha |
| Number of Farm Severances | 4 | 4 | 4 |
| Area of Landlocked Parcels | 8.0 ha | 10.0 ha | 0 ha |
| Area of Active Farmland Removed from Production | 5.6 ha | 5.1 ha | 6.7 ha |
| Area of Specialty Crop Land Removed | 2.6 ha | 0 ha | 0 ha |
| <u>NATURAL ENVIRONMENTAL FEATURES</u> | | | |
| Area of all Forest, Plantations and other Woodlots Affected | 12.6 ha | 12.6 ha | 8.4 ha |
| Area of Highest Quality and Maturing Representative Woodlots Affected | 10.4 ha | 9.9 ha | 7.6 ha |
| <u>NOISE</u> | | | |
| Number of Residences experiencing over 5 dBA increase | 4 | 2 | 2 |
| <u>COST</u> | | | |
| | --- | additional cost of one residence | additional cost of acquiring Pet Cemetery |
| <u>HIGHWAY GEOMETRICS</u> | | | |
| | best | acceptable | acceptable |
| <u>FLEXIBILITY</u> | | | |
| | provides greatest flexibility for meeting long-term requirements of Transport Canada and Ontario Hydro | little flexibility | little flexibility |

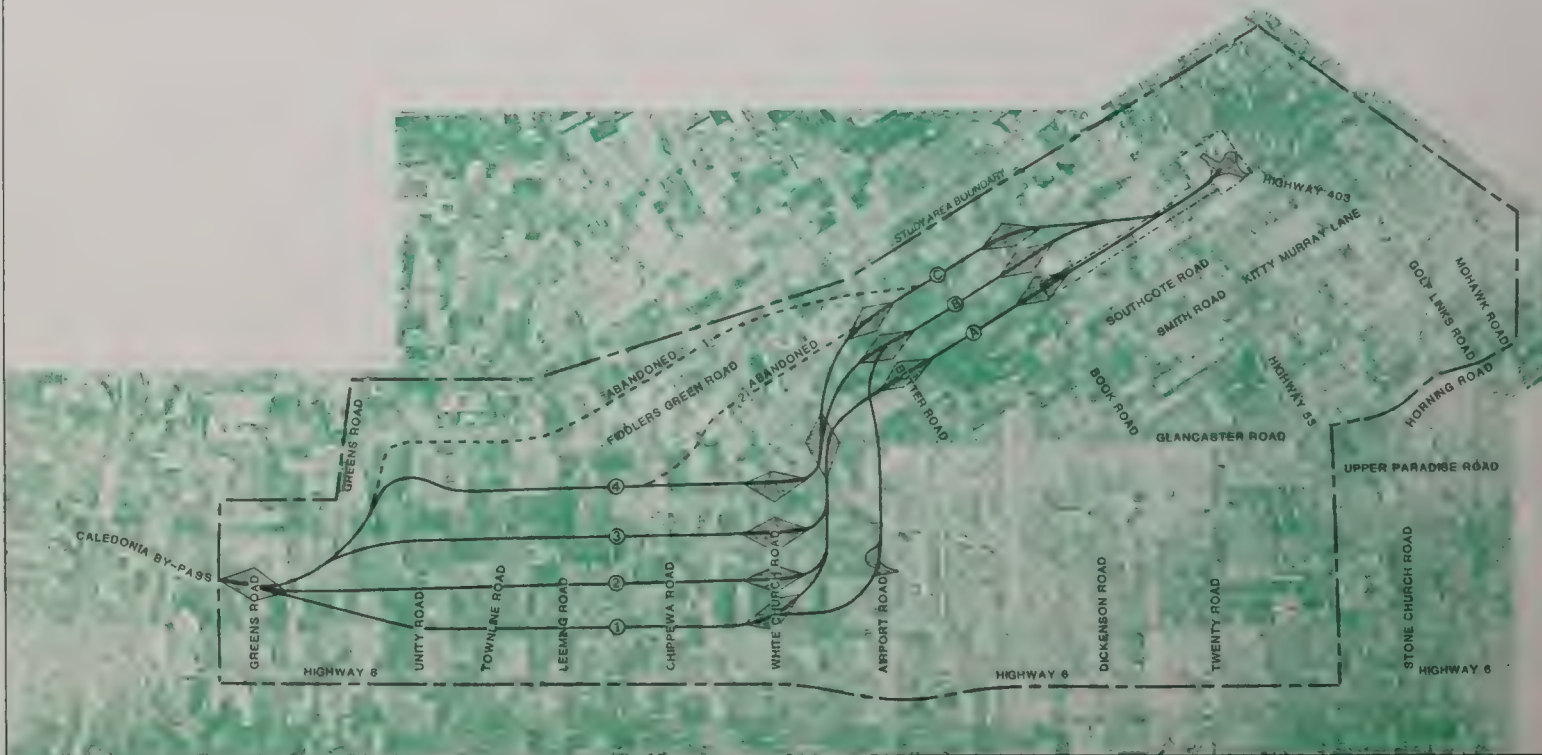


Exhibit 3.3

Alternative Alignments

Road and White Church Road and Alternative A1A with its east-west portion along Airport Road.

The evaluation considered those portions of the alignments from Highway 53 to Greens Road. Most factors and criteria were used in the evaluation, with the exception of those factors that would not apply to the east-west portion and/or would be the same for both alternatives. The criteria that were not used were:

- effects to the Unity Road community;
- planning policies;
- visual analysis.

Table 3.2 documents the assessment of the two alternatives.

In comparison to Alignment A1, Alignment A1A provided similar service to the airport with similar construction costs. However, Alignment A1A requires the removal of four additional residences including a farmstead and has substantially greater noise effects to nearby residents, although it requires about half as much high quality forest. Therefore, based on the nature of its greater impacts; i.e., the number of properties required, Alternative Alignment A1A was rejected in favour of Alignment A1.

3.5 White Church Road Area

After the Second Series of Public Information Centres, concerns were raised by the Township of Glanbrook Council and local residents about the interchange at and realignment of White Church Road. In addition, Transport Canada requested that the interchange servicing the south side of the Hamilton Civic Airport be aligned directly opposite the existing terminal access road.

The Township of Glanbrook Council requested that the interchange at White Church Road be provided in an area south of White Church Road to allow for uninterrupted east-west travel on White Church Road and to allow the potential for development in Mount Hope to extend southward to White Church Road.

In order to respond to these requests, four alternative configurations were evaluated for the White Church Road interchange area. These alternatives are shown on Exhibit 3.4.

Scheme 1 provides direct ramps to and from the south only from Highway 6 (New) to existing Highway 6 local access would be provided by the interchange from Airport Road. A link road is required between Highway 6 (New) and existing Highway 6.

Scheme 2 is a modification of the full Parclo 'A' interchange at White Church Road with diamond ramps on the east side of Highway 6 (New) to reduce proximity impacts to residents along White Church Road.

Scheme 3 is the interchange configuration presented to the public and Council at the October 1985 series of Public Information Centres. This scheme provides a full Parclo 'A' interchange at White Church Road.

Scheme 4 provides a Trumpet 'B' interchange at Highway 6 (New) with a link road to existing Highway 6.

Table 3.3 outlines the factors taken into consideration in the evaluation of these four schemes. Cost was considered to be relatively the same for all four alternatives.

Scheme 4, the Trumpet 'B' interchange south of White Church Road, was selected because it best met the concerns of the Township of Glanbrook and the local residents. Scheme 4 allows for uninterrupted east-west travel on White Church Road and development in Mount Hope can extend southerly to White Church Road. The interchange and link road is located approximately 350 m from the residents on White Church Road and thus significantly reduces concerns over proximity effects. Scheme 4 also provides the best traffic service as it serves both the major traffic movement to and from the south between Highway 6 (New) and existing Highway 6, and local traffic to and from the north.

In comparison to Schemes 1 and 4, Schemes 2 and 3 offered poorer traffic service, greater proximity impacts to residents on White Church Road, prohibited continuous east-west travel along White Church Road, and prohibited the extension of development southerly from Mount Hope to White Church Road. Therefore, Schemes 2 and 3 were rejected in favour of either Scheme 1 or Scheme 4.

In comparing Scheme 4 and Scheme 1, Scheme 4 provides slightly improved flexibility in traffic services as there are ramps provided to and from the north on Highway 6 (New). Both schemes offer through east-west travel on White Church Road and allow development to extend southerly from Mount Hope to the White Church Road area. Therefore on the basis

TABLE 3.2
DETAILED ASSESSMENT OF ALTERNATIVE A1 AND ALTERNATIVE A1A

| | A1 | A1A |
|---|--|--|
| <u>PROPERTY</u> | | |
| Number of Residences Taken | 3 | 6 |
| Commercial Properties Taken | 0 | 0 |
| Industrial Properties Taken | 2 | 2 |
| Institutional Properties Taken | 0 | 0 |
| Residential Properties Affected | 1 | 1 |
| Commercial Properties Affected | 0 | 0 |
| Industrial Properties Affected | 2 | 2 |
| Institutional Properties Affected | 1 | 1 |
| <u>AGRICULTURE</u> | | |
| Areas of Class 1, 2, and 3 Lands Removed by Class: | | |
| Class 1 | 121 ha | 121 ha |
| Class 2 | 17 ha | 17 ha |
| Class 3 | 24 ha | 24 ha |
| TOTAL | 162 ha | 162 ha |
| Number of Farmsteads Removed | 0 | 1 |
| Area of Specialty Crop Lands Affected | 3 ha | 3 ha |
| Number of Farms Affected | 42 | 38 |
| Number of Farm Severances: | | |
| Landlocked | 7 | 0 |
| New Units | 6 | 6 |
| Area of Landlocked Parcels | 52 | 44 |
| <u>HERITAGE</u> | | |
| Number of Heritage Features Affected (by type): | | |
| Direct | Farmstead 116A | Farmstead 116A Farmstead 87 |
| Indirect | Parkin Cemetery 1168 Stump Fence Unity Road Church 12 Farmstead 76 Cemetery 74 | Parkin Cemetery 1168 Stump Fence Unity Road Church 12 Farmstead 76 Cemetery 74 |
| <u>NOISE</u> | | |
| Number of Residences Experiencing Increase of Over 5dBA | 30 plus school | 34 plus school |
| <u>NATURAL ENVIRONMENTAL FEATURES</u> | | |
| All forests & Woodlots | 29 na | 14 ha |
| Highest Quality Woodlots & Forests | 24 na | 9 ha |
| Stream Crossings: | | |
| Primary | 2 | 2 |
| Secondary | 3 | 3 |
| <u>COST</u> | | |
| Construction | Same length, thus same cost | Same length, thus same cost |
| <u>TRAFFIC SERVICE</u> | | |
| Airport Connection | Provides direct connection to the airport | Provides direct connection to the airport |



Highway 6 (New)
HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report







Residential

Commercial

Institutional

Exhibit 3.4 (a)

White Church Road.
Interchange Alternative. Scheme 1



Highway 6 (New)
HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report



Residential
 Commercial
 Institutional

Exhibit 3.4 (b)

White Church Road.
Interchange Alternative. Scheme 2



Highway 6 (New)
HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report



0 100 200m

Residential
 Commercial
 Institutional

Exhibit 3.4 (c)

White Church Road.
Interchange Alternative. Scheme 3



Highway 6 (New)
HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

Exhibit 3.4(d)

White Church Road.
Interchange Alternative. Scheme 4

TABLE 3.3
COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA
CHIPPEWA ROAD TO GLANCASTER ROAD

| | Scheme 1 | Scheme 2 | Scheme 3 Parcel 'A' at White Church Road | Scheme 4 Trumpet 'B' |
|--|--|--|---|--|
| | Direct Ramps | Partial Diamond | | |
| <u>PROPERTY</u> | | | | |
| Number of residential properties taken | 1 | 1 | 1 | 1 |
| Number of commercial properties taken | 0 | 0 | 0 | 0 |
| Number of industrial properties taken | 0 | 0 | 0 | 0 |
| Number of institutional properties taken | 0 | 0 | 0 | 0 |
| Number of properties for which land is required but which are not eliminated (by type) - Residential | 1 | 1 | 1 | 1 |
| - Commercial | 0 | 0 | 0 | 0 |
| - Industrial | 0 | 0 | 0 | 0 |
| - Institutional | 0 | 0 | 0 | 0 |
| <u>AGRICULTURE</u> | | | | |
| Area of Class 1 and 2 lands removed (by Class) | | | | |
| - 1 | 48 | 48 | 48 | 48 |
| - 2 | 2 | 2 | 2 | 2 |
| - Total | 50 | 50 | 50 | 50 |
| Number of farmsteads removed | 0 | 0 | 0 | 0 |
| Number of farms affected | 12 | 13 | 13 | 12 |
| Number of farm severances - landlocked | 5 | 3 | 3 | 5 |
| - new units | 1 | 1 | 1 | 3 |
| Area of landlocked parcels | 20 ha | 10 ha | 16 ha | 21 ha |
| <u>HERITAGE</u> | | | | |
| Number of heritage features affected (by type) | | | | |
| - direct | None | None | None | None |
| - indirect | Farmstead (76) on White Church Road | Farmstead (76) on White Church Road and Cemetery (74) on White Church Road | Farmstead (76) on White Church Road and Cemetery (74) on White Church Road | Farmstead (76) on White Church Road |
| <u>COMMUNITY</u> | | | | |
| Effects on Mount Hope and White Church Road Development | Some disruption to White Church Road residents; some increase in traffic on Airport Road and in Mount Hope | Some disruption and perceived negative impacts to White Church residents | Some disruption and perceived negative impacts to White Church Road residents | Some disruption to White Church Road residents |

TABLE 3.3
COMPARISON OF INTERCHANGE ALTERNATIVES - WHITE CHURCH ROAD AREA
CHIPPEWA ROAD TO GLANCASTER ROAD
(continued)

| | Scheme 1 | Scheme 2 | Scheme 3 | Scheme 4 |
|--|---|---|---|--|
| | Direct Ramps | Partial Diamond | Parclo 'A' at White Church Road | Trumpet 'B' |
| <u>NOISE</u> | | | | |
| Number of residences experiencing over 5 dBA increase | 3 | 3 | 3 | 3 |
| <u>NATURAL ENVIRONMENT</u> | | | | |
| Area of all forests, plantations and other woodlots affected | 6 | 5 | 5 | 6 |
| Area of highest quality and maturing representative woodlots affected | 6 | 5 | 5 | 6 |
| Area of Woodland Improvement Act areas affected | 0 | 0 | 0 | 0 |
| Area of Identified Waterfowl Area affected | 9 | 6 | 6 | 11 |
| Number of stream crossings - primary | 1 | 1 | 1 | 1 |
| - secondary | 0 | 0 | 0 | 0 |
| <u>PLANNING POLICIES</u> | | | | |
| Effects on future land use | Preserves open space and even- tual link between Mount Hope and White Church Road settlement | Precludes future expansion of resi- dential area of Mount Hope to in- clude White Church Road settlement | Precludes future expansion of resi- dential area of Mount Hope to in- clude White Church Road settlement | Preserves open space and eventual link between Mount Hope and White Church Road settlement |
| <u>TRAFFIC SERVICE</u> | | | | |
| | Movement to/from existing Hwy. 6 served directly by ramps south of White Church Road | Serves movement to/from existing Hwy. 6 indirectly via White Church Road interchange; White Church Road interchange pro- vides full movement to/from Hwy. 6 (New) for local traffic | Serves movement to/from existing Hwy. 6 indirectly via White Church Road interchange; White Church Road interchange pro- vides full movement to/from Hwy. 6 (New) for local traffic | Movement to/from existing Hwy. 6 served by ramps south of White Church Road. Local traffic also served by ramps to/from the north |
| | Ramps serve local traffic to/from the south | | | |
| | Local traffic to/ from the north on Hwy. 6 (New) must reroute to Airport Road interchange | Restricts E-W travel on White Church Road | Restricts E-W travel on White Church Road | |

of somewhat better traffic service, Scheme 4 was selected over Scheme 1.

3.6 Cross Section

In order to determine the ultimate cross section for Highway 6 (New) and the resulting right-of-way requirement, a detailed analysis of alternative cross sections for both rural and urban designs was undertaken.

Table 3.4 outlines the comparison of the urban cross sections and Table 3.5 outlines the comparison of the rural cross sections.

With the urban cross section the ultimate facility is a six-lane divided highway expandable to eight-lanes with a 7.5 m median using a "New Jersey" barrier. Median drainage is provided by a 300 mm storm sewer. This ultimate cross section requires an 80 m right-of-way.

For the urban design, four alternative interim stage (four-lane arterial) cross-section arrangements were compared.

With the rural cross section, the ultimate facility is an six-lane divided freeway with a 15 m median with open drainage. This requires a 100 m right-of-way. Three alternative cross sections were examined for an interim four-lane arterial (at-grade) facility. One two-lane stage was also examined.

All of the alternatives discussed were compared on the following basis:

- construction cost (This cost is comparative between the alternatives only. It should not be used for determining construction costs of the entire facility.);
- salvageability;
- traffic operations;
- traffic service;
- relative maintenance costs;
- staging;

- structure implication;
- right-of-way requirements.

Important factors in the alternative comparison was the right-of-way requirements, i.e. 80 m vs. 100 m right-of-way and the traffic operational characteristics of the at-grade intersections in the initial stage.

As the Highway 6 (New) facility will be staged constructed (see Section 4), particular emphasis was placed upon the ability to stage construct a facility given that the initial stage was likely to be in place for a considerable period of time.

The comparison of alternative cross sections was conducted at several Study Team meetings with representatives of the Traffic Office. From these meetings and presentations, it was decided that the ultimate facility for Highway 6 (New) will be a six-lane freeway within an 80 m right-of-way with a 15 m median providing open drainage. This was confirmed at a Regional Presentation on 3 June 1985.

This decision was based primarily on:

- traffic forecasts which could not justify an eight-lane facility;
- the need to preserve agricultural land. (Traditionally, rural freeways have employed a 100 m right-of-way. However, due to the importance of the agricultural land in this area, a less-than-normal right-of-way was employed that would accommodate a six-lane facility.)

The proposed cross section could be widened to eight lanes by providing two additional lanes in the median with storm sewer drainage.

TABLE 3.4
COMPARISON OF URBAN CROSS SECTIONS

| Description | Initial Stage Cost (\$) ² | Salvageability | Traffic Operations | Traffic Service | Relative Maintenance Cost | Staging | Structures ³ | Right-of-Way Requirements ¹ |
|--|--------------------------------------|--|--|--|-----------------------------|---|--|--|
| INTERIM FACILITY | | | | | | | | |
| - four-lane undivided rural arterial (north-bound or southbound lanes of ultimate) | 950 | - all | - at-grade inter-sections easily accommodated | - lowest level-of-service - highest accident potential | - lowest | - only logical next step is an eight-lane freeway | - crossing roadways will have shorter structures than rural sections | 8 ha/km |
| - four-lane divided arterial | 1,300 | - all | - treatment of "New Jersey" barrier at intersections has not been determined | - medium level-of-service - medium accident potential | - highest | - if next stage is a four-lane freeway ultimate interchange ramps cannot be built | - crossing roadways will have shorter structures than rural sections | 8 ha/km |
| - 7.5 m median with raised "New Jersey" barrier | | | | | | | | |
| - median drainage provided by 300 mm storm sewer | | | | | | | | |
| - inside lanes built first | | | | | | | | |
| - same as above but no storm sewer | 1,200 | - median work will be required to provide storm sewer in ultimate stage and change roadway crown | - treatment of "New Jersey" barrier at intersections has not been determined | - medium level-of-service - medium accident potential | - highest | - if next stage is a four-lane freeway ultimate interchange ramps cannot be built | - crossing roadways will have shorter structures than rural sections | 8 ha/km |
| - initial lanes drain outward | | | | | | | | |
| - four-lane divided arterial | 1,200 | - 350 m at each at-grade inter-section cannot be salvaged | - median must be narrowed to provide at-grade inter-sections | - highest level-of-service - second in accident potential | - medium | - if next stage is a four-lane freeway, ultimate interchange ramps can be built - good flexibility | - crossing roadways will have shorter structures than rural sections | 8 ha/km |
| - 22 m median with open drainage | | | | | | | | |
| - outside lanes built first | | | | | | | | |
| ULTIMATE FACILITY | | | | | | | | |
| - eight-lane divided freeway | 1,950 | N/A | N/A | - same level of service as rural section - higher accident potential than rural section | - higher than rural section | - ultimate facility | - crossing roadways will have shorter structures than rural sections | 8 ha/km |
| - 7.5 m median with raised "New Jersey" barrier | | | | | | | | |
| - median drainage provided by 300 mm storm sewer | | | | | | | | |

NOTES:

1. All U (Urban) alternatives have an 80 m right-of-way.
2. Costs reflect differences in grading requirements (per metre).
3. Based on a 10 m wide structure at \$700/m².

TABLE 3.5
COMPARISON OF RURAL CROSS SECTIONS

| Description | Initial Stage Cost (\$) ² | Salvageability | Traffic Operations | Traffic Service | Relative Maintenance Cost | Staging | Structures ⁴ | Right-of-Way Requirements ^{1,3} |
|---|--------------------------------------|---|---|--|----------------------------|---|---|--|
| INTERIM FACILITY | | | | | | | | |
| - four-lane undivided rural arterial (north-bound or southbound lanes of ultimate) | 950 | - all | - at-grade inter-sections easily accommodated | - lowest level-of-service - highest accident potential | - lowest | - only logical next stage is an eight-lane freeway | - crossing roadways will have longer structures (\$50,000 more per structure) than urban sections | 10 ha/km |
| - four-lane divided arterial - 15 m median with open drainage, - inside lanes built first | 1,200 | - 350 m at each at-grade inter-section cannot be salvaged | - median must be narrowed to provide good at-grade inter-sections | - highest level-of-service - lowest accident potential | - medium | - if next stage is a four-lane freeway, ultimate interchange ramps cannot be built | - crossing roadways will have longer structures (\$50,000 more per structure) than urban sections | 10 ha/km |
| - four-lane divided arterial - 30 m media with open drainage - outside lanes built first | 1,450 | - 350 m at each at-grade inter-section cannot be salvaged | - median must be narrowed to provide good at-grade inter-sections | - highest level-of-service - lowest accident potential | - medium | - if next stage is a four-lane freeway, ultimate interchange ramps can be built - good flexibility for future stages | - crossing roadways will have longer structures (\$50,000 more per structure) than urban sections | 10 ha/km |
| - two lane arterial (i.e., build one half of above section) | 700 | All | - at-grade inter-section easily accommodated | - North of the Airport Level-of-Service "D" and Level-of-Service "E" south of the airport/ | N/A | - easily staged to four-lane arterial or freeway | - crossing roadways will have longer structures (\$50,000 more per structure) than urban sections | 10 ha/km |
| ULTIMATE FACILITY | | | | | | | | |
| - eight lane divided freeway - 15 m median with open drainage | 1,950 | N/A | N/A | - same level of service as urban section - lower accident potential than urban section | - lower than urban section | - ultimate facility | - crossing roadways will have longer structures (\$50,000 more per structure) than urban sections | 10 ha/km |

NOTES:

1. All R (Rural) alternatives have a 100 m right-of-way.
2. Costs reflect differences in grading requirements (per metre).
3. This could be reduced to 8.75 ha/km with use of an 87.5 right-of-way.
4. Based on a 10 m wide structure at \$700/m².

4. The Recommended Plan

4.1 General

This report section describes the Recommended Preliminary Design for Highway 6 (New) from Highway 403 to the north end of the Caledonia Bypass at Greens Road.

The preliminary design plans, profiles and cross sections are shown on plates in Appendix A.

This section also outlines the environmental effects and mitigating measures.

Affects of noise, staging and property requirements of the Recommended Plan are also discussed.

4.2 General Description of the Recommended Alignment

Table 6.2 in Part I of this report summarizes the recommended Highway 6 (New) alignment and profile, together with the design controls, potential effects and appropriate mitigating measures.

4.3 Environmental Effects and Mitigating Measures

Table 4.1 provides a detailed analysis of various environmental impacts and possible remedial measures.

Other mitigation and "Environmentally Significant Areas/Issues" are discussed in Chapter 6, Part I of this report.



4.4 Road Closings, Assumptions and Designations

4.4.1 Road Closings

The following road closings are required as part of this project.

Table 4.1

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|---|--|--------------------|-----------|--|--|---|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| CLEARING OF RIGHT OF WAY | A) Air pollution from open burning | X | | A1) Restrict burning | Special Provisions, Form 200 |  GENERALLY THROUGHOUT  |
| | B) Appearance of disposal sites | X | X | B1) Identify appropriate disposal sites (on or off ROW) - e.g. borrow pits | Special Provisions, Form 200 | |
| | C) Unnecessary removal of vegetation | | X | B2) Landscaping of disposal areas | Maintenance operation | |
| | | | | C1) Selective clearing provision | Design and Special Provisions | |
| | D) Damage to remaining vegetation (outside ROW) | X | X | C2) Post-construction landscaping | Maintenance operation | |
| | | | | D1) Fence and protect adjacent vegetation | Design and Special Provisions | |
| | | | | D2) Post-construction planting of resilient species adjacent to remaining vegetation | Maintenance operation | |
| | E) Damage outside ROW by construction traffic accessing site | X | | D3) Immediate repair of damaged trees | Special Provisions | |
| | | | | E1) Appropriate designation of construction site access routes | Special Provisions, Form 200 | |
| | F) Sedimentation in streams caused by storm water erosion of unprotected topsoil | X | | F1) Check dams in drainage routes to trap siltation prior to its accessing surface water courses. (Special Provisions) | Design and Special Provisions | |
| | G) Loss of farm crops | X | X | G1) Attempt to schedule operations so current crop is salvaged | Special Provisions | |
| | H) Loss of valuable timber | X | | H1) Can be made available to the adjacent owner | Special Provisions, Form 200 | |
| TOP SOIL STRIPPING (Part of earth excavation item - below) | A. Loss of valuable resource | | X | A1) Re-use top soil for covering road grade | Design, Form 570 | GENERALLY THROUGHOUT |
| | | | | A2) Stock-pile surplus topsoil for use on other projects (if economically feasible) | Form 570, Special Provisions | |

continued



Table 4.1

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|--|---|--------------------|-----------|--|--|----------------------------------|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| | B) Sedimentation in streams caused by storm water erosion of top soil stock piles | X | | B1) Protect stock piles with perimeter check dam B2) Plant and seed longer-term stock piles | Design. Special Provisions Special Provisions | GENERALLY THROUGHOUT |
| EARTH GRADING (EXCAVATION, BORROW, AND DITCH CONSTRUCTION) | A) Disposal of material unsuitable for roadway construction - aesthetic and other impacts | X | X | A1) Use within ROW if possible - slope flattening - median A2) Careful identification of disposal areas, if appropriate (usually left to contractor). | Design Special Provisions | ↑ GENERALLY THROUGHOUT ↓ |
| | B) Inconvenience to existing traffic and pedestrians | X | | B1) Suitable design of detours B2) Restrictions on times and dates of contractor operations (e.g. on Highway 403) B3) Maintenance of safe pedestrian routes | Design, Form 100 (Sections 106-4/5) Special Provisions | |
| | C) Stream sedimentation due to erosion of unprotected cut and fill slopes | X | X | C1) Sediment-control check dams and settlement ponds in drainage ditches C2) Seeding and mulching C3) Restriction on sizes of cuts and fills that can be left unprotected C4) Restrictions on time that cut and fill slopes can be left unprotected C5) Provision for temporary slope protection where necessary | Design. Special Provisions Design. Special Provisions Special Provisions Special Provisions Design. Special Provisions | |
| | D) Damage to haul roads | X | | D1) Repairs during and after construction | Form 100 | |
| | E) Noise vibration, dust effects on residences along haul roads | X | | E1) Dust control measures (water and calcium chloride) E2) Restrictions on times of contractor's operations | Design. Special Provisions Special Provisions | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Table 4.1 continued

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|------------------------|---|--------------------|-----------|--|--|--|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| | F) Aesthetic impact of large fills | | x | F1) Contour grading F2) Landscaping and screen planting | Design Design and maintenance |  GENERALLY THROUGHOUT  |
| | G) Qualitative effects on ground water | x | x | G1) Set profile and road drainage to minimize effects | Design | |
| | H) Quantitative effects on ground water (wells) | x | x | H1) Monitor well performance and make appropriate repairs after construction (e.g. new well or property purchase) | Pre- and Post-Construction activities | |
| | J) Changes to local surface drainage patterns | | x | J1) Appropriate roadway drainage strategy J2) Accommodated local drain tiles | Design Design | |
| | K. Sedimentation in streams due to erosion at highway ditch outlets | x | x | K1) Place siltation traps (e.g. check dams) during construction K2) Provide surface erosion protection methods as appropriate; e.g. - ditch sodding - rip rap - gabion walls K3. Direct highway drainage away from particularly sensitive slopes K4) Provide storm sewer system in specific areas to avoid surface run-off K5) Use temporary sewers during construction | Special Provisions. Design Design. Normal standards Design Design Special Provisions | |
| | L) Damage beyond right of way (trees, vegetation, creeks, etc.) caused by construction traffic accessing site | x | | L1) Careful definition of allowable access routes. Identification and fencing of prohibited areas L2) Call advanced structure and major culvert contract to allow grading contractor to use ROW for full access | Special Provisions, Form 100 Design Design. Appropriate award schedule | |
| | M) Destruction of archaeological sites | | x | M1) Investigate and document site prior to construction M2) Salvage of archaeological sites M3) Restriction of access during construction | Pre-construction survey Pre-construction Salvage Operation | |

continued

Table 4.1

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|---|--|--------------------|-----------|--|--|---|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| | N) Opening of borrow pits (aesthetic and other impacts) | X | X | N1) Attempt to balance profile in order to minimize borrow requirements N2) Post-construction rehabilitation of borrow pits N3) Control of operation on Ministry-designated borrow areas N4) Adherence to local and provincial statutes re opening and operating borrow pits and quarries | Design Special Provisions, Form 200 Form 561 Form 561, Form 200 N/A | ↑ GENERALLY THROUGHOUT ↓ |
| CONSTRUCTION OF CULVERTS AT MINOR WATER COURSES AND REALIGNMENTS OF MINOR WATER COURSES | A) Upstream flooding due to flow restrictions B) Erosion (and down-stream sedimentation) due to increased flow velocities caused by: - channel gradient changes - low friction in culvert | | X X | A1) Ensure adequate hydraulic opening B1) Design culvert to minimize flow velocities by: - induced hydraulic pump within culvert - drop-structure at inlet (weir) - minimize gradient B2) Provide erosion protection downstream of culvert, such as: - rip rap - spill way B3) Re-grade longer sections of stream to minimize gradients and hence velocities | Design Design Design Design | ↑ Minor stream crossing locations ↓ |
| | C) Contamination of water course due to fuelling and maintenance of contractor's equipment | X | | C1) Restrictions on refuelling areas | Special Provisions | |
| | D) Downstream sedimentation caused by construction operation in stream bed | X | | D1) Provide temporary sedimentation ponds in stream, downstream of work D2) Locate culvert slightly off existing stream alignment (create creek re-alignment) D3) Schedule construction for low-flow seasons | Design, Special Provisions Design Special Provisions, Award Schedule | |

Table 4.1 *continued*

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|--|---|--------------------|---------------------|--|---|--|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| | E) Downstream sedimentation caused by erosion of banks due to vegetation removal at crossing site F) Disruption to fish spawning routes G) Aesthetic impact of stream relocations | X X | X X X | E1) Provide temporary sedimentation ponds E2) Re-vegetate banks as soon as possible E3) Other erosion protection measures if necessary (e.g. rip rap, gabion walls) F1) Avoid construction during fish spawning periods F2) Include fish ladders in culvert designs F3) Ensure stream velocities in re-aligned sections are not excessive by: - minimizing gradients - placement of rock rip rap in an environmentally acceptable manner G1) Design relocation to be compatible with adjacent natural sections | Design. Special Provisions Special Provisions Design Special Provisions Contract award schedule Design Design Design | ↑ Minor stream crossing locations such as: ↓ |
| CONSTRUCTION OF BRIDGES OVER RIVERS <i>(Note: For other effects related to bridge construction see "Bridge Construction" below)</i> | A) Upstream flooding due to flow restrictions B) Aesthetic impact at bridge(s) on valley lands C) Disruption to wildlife corridor along valley | | X X X | A1) Ensure adequate hydraulic opening based upon appropriate criteria (e.g. Regional Flood) A2) Ensure hydraulically acceptable placement of piers A3) Avoid placement of fill within flood lines B1) Optimum aesthetic design of bridge(s) (economy is a major consideration) B2) Screen planting where appropriate C1) Minimize number of piers in valley (economy is again a major factor) | Design Design Design Design Maintenance Design | ↑ Seneca Creek Welland River ↓ |

continued

Table 4.1 continued

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|----------------------------|---|--------------------|-----------|--|--|--|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| | | | | C2) Minimize vegetation removal under high-level bridges | Design. Special Provisions | ↑ SENECA AND WELLAND RIVER CROSSINGS ↓ |
| | | | | C3) Appropriate post-construction landscaping | Maintenance | |
| | D) Disruption to fish spawning routes | X | | D1) Control construction periods to avoid spawning seasons | Special Provisions. Award schedule | |
| | E) Water contamination due to fuelling and maintenance of contractor's equipment | | X | E1) Control fuelling areas and locations of contractor's yards | Special Provisions | |
| | | | | E2) Control disposal of construction debris | Special Provisions, Form 100 | |
| | F) Sedimentation due to construction (e.g. pier foundations in river bed) | | X | F1) Attempt to avoid placement of piers in river bed | Design | |
| | | | | F2) Construct sediment traps around foundation sites | Design | |
| | | | | F3) Construction in low-flow seasons | Award schedule | |
| | | | | F4) Coffe-dam and dewater sites | Design | |
| | G) Impacts on adjacent valley areas by construction traffic access to crossing site | X | | G1) Careful definition of access routes | Design. Special Provisions | |
| | | | | G2) Fencing and protection of prohibited areas | Design. Special Provisions | |
| | | | | G3) Ensure temporary crossing locations are in areas that will, in any event, be disrupted by the main crossing construction | Special Provisions | |
| PLACING GRANULAR MATERIALS | A) Haul road related impacts | X | | SEE DISCUSSION UNDER EFFECTS D & E - EARTH GRADING, ABOVE Also Form 314 - Section -05 | | ↑ THROUGHOUT ↓ |
| | B) Dust related effects | X | | B1) Dust control measures (water, calcium chloride) | Special Provisions. Design | |
| | C) Opening pits and quarries | X | X | C1) Adequate geotechnical engineering to minimize granular requirements | Design | |
| | | | | C2) Post-construction rehabilitation of pits and quarries | Special Provisions, Form 200 Form 561 | |

Table 4.1 continued

Description of Major Construction Items and Activities: Associated Potential Effects and Possible Mitigating Measures

| MAJOR ITEM OR ACTIVITY | POTENTIAL EFFECT | DURATION OF EFFECT | | POSSIBLE MITIGATING MEASURES | METHODS OF IMPLEMENTING MITIGATING MEASURE | AREA RELEVANT TO HIGHWAY 6 (NEW) |
|---|---|--------------------|-----------|--|--|----------------------------------|
| | | CONSTRUCTION TERM | LONG TERM | | | |
| PLACING ASPHALT MATERIALS | A) Haul road related impacts B) Air pollution, fumes and odours | X X | | SEE DISCUSSION UNDER EFFECTS D & E - EARTH GRADING, ABOVE B1) Control on asphalt-laying times in areas close to residences B2) Control on location of plant | Special Provisions Special Provisions | ↑ THROUGHOUT ↓ |
| BRIDGE CONSTRUCTION (Note: For special effects related to River Bridges see "Construction of Bridges Over Rivers" above; | A) Excessive Noise related to pile driving B) Disruption to existing road traffic C) Visual effect of bridges D) Effects (social, natural) of construction traffic access to bridge sites (e.g. pre-cast beam placement) | X X X | X | A1) Control times for pile driving in areas adjacent to residential uses B1) Provide adequate detours B2) Close minor roads and use other roads, e.g. close 14th Ave and divert traffic via 9th and 10th Lines to Steeles Ave. C1) Provide screen planting where appropriate D1) Schedule operations for off-peak traffic conditions D2) Define access routes where appropriate | Special Provisions Design Design Maintenance Special Provisions Design, Special Provisions Form 100 | ↑ ALL STRUCTURES ↓ |

Butter Road

A section of Butter Road will be realigned as it crosses Highway 6 (New) in order to maintain access to adjacent property owners. This will require closing of a short section of existing Butter Road. This closing will cause no hardship and will not provide any out-of-way travel for the public.

White Church Road

As in the case of Butter Road, a section of White Church Road will require realignment to maintain access to existing properties. This will require a closing of a short section of White Church Road. The new roadway will be constructed to the east of the of the existing right-of-way. This closing will pose no hardship or out-of-way travel to the public.

4.4.2 Designations and Transfers

A CAH designation will be placed on Highway 6 (New) throughout this project.

After construction of Highway 6 (New) it is expected that existing Highway 6, between Hamilton and Caledonia, will be transferred to the Regional Municipality of Haldimand-Norfolk and the Regional Municipality of Hamilton-Wentworth. This will be negotiated during the detail design phase.

4.5 Construction Staging

4.5.1 Cross Section Staging

The proposed initial stage of Highway 6 (New) is a two-lane facility with the northbound lanes being constructed first. This cross section was selected as it matches the capacity of the existing Caledonia Bypass, provides for an adequate level-of-service for some time and minimizes initial financial expenditures.

A likely interim stage between the initial and ultimate is a four-lane facility with a 22 m median and open drainage. The two outside lanes (of the ultimate freeway) in each direction would be constructed first. Widening would be accommodated on the median side to provide for six-lanes in each direction as an ultimate design.

4.5.2 Longitudinal Staging

The question of longitudinal staging was discussed at several meetings with Regional Planning and Design, with the final recommendation being made at the Regional Presentation on 27 February 1986. Factors, often conflicting, which bear on a decision regarding longitudinal staging include:

- important objectives of Highway 6 (New) such as the need to provide access between the Hamilton Airport and the provincial freeway system and the desire to improve the use and operation of the Caledonia Bypass;
- the fact that forecasted traffic volumes are heavier on the south half of the facility than on the north half with a significant diversion of traffic to existing Highway 6 in the vicinity of White Church Road;
- The desire to minimize the initial construction cost in order to ensure that the province has the financial capability to proceed with construction.

Various longitudinal staging options considered included:

- Highway 403 to Butter Road in order to provide immediate service to the airport with any future construction deferred until warranted by demand;
- an initial construction stage from the Caledonia Bypass northerly to a point that could re-connect to existing Highway 6 in order to immediately improve usage of the Caledonia Bypass with no further construction planned until warranted;
- a basically continuous construction program, with appropriate construction contract stages.

The Ministry has concluded that the latter alternative (a commitment to a continuous construction program between Highway 403 and the Caledonia Bypass) is most appropriate. During final design and construction programming it is recommended that the following contract sequence be adopted:

Contract Package No. 1

A two-lane facility from Highway 403 to Butter Road connecting to the recently completed Butter Road-Airport Road connection, thus providing good service to the Hamilton Civic Airport.

Contract Package No. 2

From the north end of the Caledonia Bypass at Greens Road to Airport Road opposite Hamilton Civic Airport, thus accommodating:

- access from the south to the airport;
- the major traffic movement up to the connection to existing Highway 6 via Airport Road where significant traffic diversion occurs; and
- improved use of the Caledonia Bypass.

Contract Package No. 3

The connection between Contracts Packages 1 and 2 above, thus completing the entire two-lane facility between Highway 403 and the existing Caledonia Bypass.

4.6 Property Requirements

4.6.1 General

The right-of-way requirements for Highway 6 (New) as identified by this Preliminary Design Study are shown on the accompanying preliminary design drawings in Appendix A.

Generally a basic right-of-way of 80 m has been adopted as a standard. This is less than the traditional right-of-way width of 100 m for such a facility. This reduced standard was employed due to the importance of agricultural operations and agricultural land within the Study Area. Additional right-of-way is required in areas of heavy grading or areas where deeper cuts or higher fills require provisions of specific devices such as benching or berms.

Generally throughout the project, property requirements have been based on normal rural grading cross sections without provision of retaining walls.

4.6.2 Access

Several properties will require revisions to entrances. These changes are shown on the accompanying preliminary design plan. The more significant changes are discussed below.

Bates

Highway 6 (New) will create a new unit on the Bate's farm north of Unity Road. Access will be required to the western portion of this farm from Unity Road. This will require construction of an access roadway suitable for farm equipment from Unity Road utilizing the Bates property only.

Jerome

Highway 6 (New) and its interchange at Book Road will create a new parcel on the Jerome lands north of Book Road. These lands are currently farmed in conjunction with other Jerome lands immediately to the east. An access roadway will be required from Book Road to the new unit.

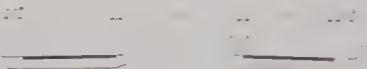

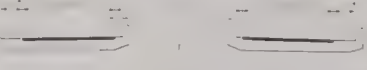
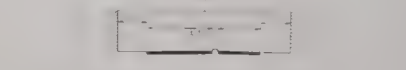
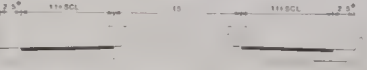










In addition, access will be maintained to the Book House on the Jerome farm immediately west of Highway 6 (New) interchange with Book Road.

4.6.3 Land-locked Parcels

Existing lot lines were followed wherever possible. However, in some case, the creation of land-locked parcels could not be avoided. In these areas, as shown on the preliminary design plans, the Ministry of Transportation and Communications will purchase these properties and may offer them for re-sale to adjacent owners.

4.7 Structures

Exhibit 4.1 shows the typical structures for all road and stream crossings of Highway 6 (New). Other typical structures are shown in the Design Criteria in Chapter 5 of this report.

| STRUCTURE NUMBER | LOCATION | CROSS-SECTION (SHOWN IN DIRECTION OF STATIONING) | | REMARKS |
|------------------|---|---|--|---|
| | | DECK | OPENING | |
| 1 | - HIGHWAY 6(NEW) OVER HIGHWAY 603 |  |  | * 1m WHERE ADJACENT TO SCL |
| 3 | - HIGHWAY 6(NEW) OVER HIGHWAY 63 |  |  | * 1m WHERE ADJACENT TO SCL |
| 10,15 | - HIGHWAY 6(NEW) OVER WELLAND RIVER - HIGHWAY 6(NEW) OVER SENECA CREEK |  |  | SIZE OF STRUCTURES TO BE DETERMINED DURING DETAIL DESIGN * 1m WHERE ADJACENT TO SCL |
| 2 | - BASKET-WEAVE, RAMP W - S / RAMP E - E.W |  | | UNDER STUDY BY REGIONAL STRUCTURAL OFFICE |
| 7,9 | - AIRPORT ROAD CONNECTION OVER HIGHWAY 6(NEW) - HIGHWAY 6 CONNECTION OVER HIGHWAY 6(NEW) |  |  | STRUCTURE EXTENDED TO ACCOMMODATE RAMP N - S AT HIGHWAY 6 CONNECTION |
| 4,16 | - BOOK ROAD OVER HIGHWAY 6(NEW) - GREENS ROAD OVER HIGHWAY 6(NEW) |  |  | |
| 5,6,8,11,13,14 | - BUTTER ROAD OVER HIGHWAY 6(NEW) - GLANCASTER ROAD OVER HIGHWAY 6(NEW) - WHITE CHURCH ROAD OVER HIGHWAY 6(NEW) - CHIPPEWA ROAD OVER HIGHWAY 6(NEW) - TOWNLINE ROAD OVER HIGHWAY 6(NEW) - UNITY ROAD OVER HIGHWAY 6(NEW) |  |  | * 2.5m AT STRUCTURE No. 14 (UNITY ROAD) TO INCORPORATE SIDEWALK |
| 12 | - LEEMING ROAD OVER HIGHWAY 6(NEW) |  |  | |
| NOT TO SCALE | | Highway 6 (New) HAMILTON TO CALEDONIA Environmental Assessment & Preliminary Design Report | | EXHIBIT NUMBER Structure Details 4.1 |

4.8 Interchange/Intersections

Exhibit 4.2 shows type and location of the interchange/intersection stages in schematic form for Highway 6 (New).

A detailed presentation of the alternative interchanges at Highway 403, Book Road and White Church Road are presented in Chapter 3 of this report.

The interchanges and intersections are shown in preliminary design level of detail in Appendix A of this report.

In the initial stages of Highway 6 (New) at-grade intersections are provided at future interchange locations at Book Road, Airport Road Connection and Greens Road. In addition, an at-grade intersection would be provided at the terminus of Stage 1 at Butter Road.

Provisions for traffic control signals will depend upon warrant calculations to be undertaken at the time of detail design.

4.9 Cross Sections

Exhibit 4.3 shows the cross section staging for Highway 6 (New).

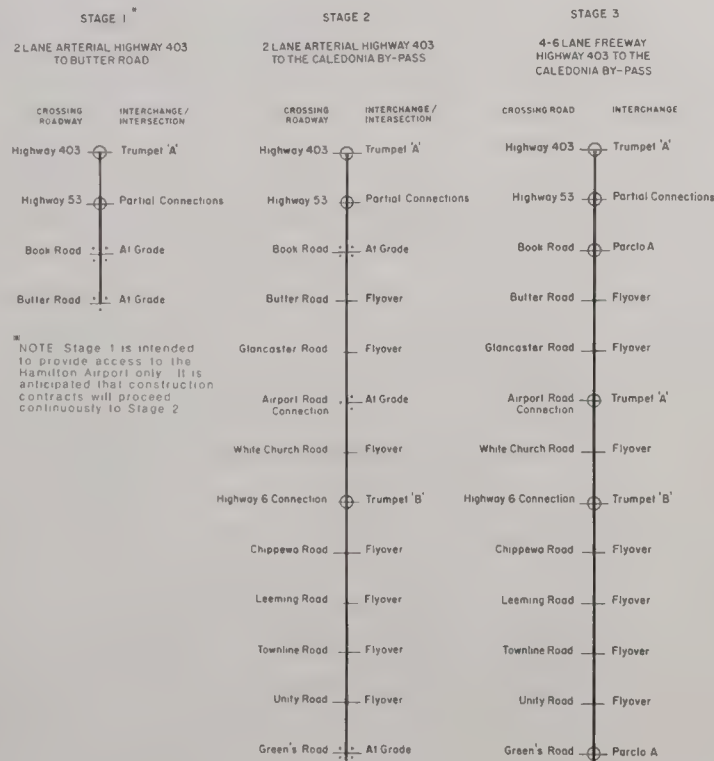
4.10 Illumination

Due to the rural nature of the area, full illumination is not proposed. However, illumination is proposed at all intersections/interchanges and other decision points.

The exact location and type of illumination is to be determined at the time of detail design. A review of Transport Canada's zoning requirements will be required in the Book Road area and low level lighting may be required in this area.

4.11 Signing

A comprehensive signing plan in accordance with Provincial standards will be developed at the time of detail design.



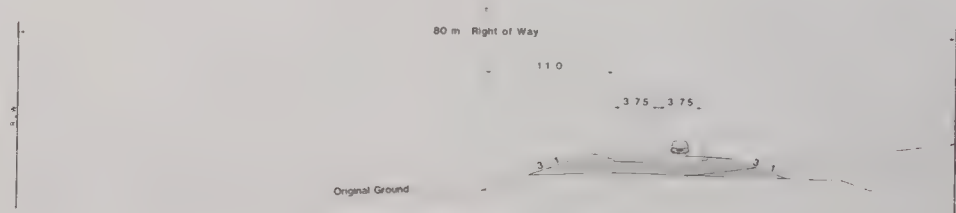
Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

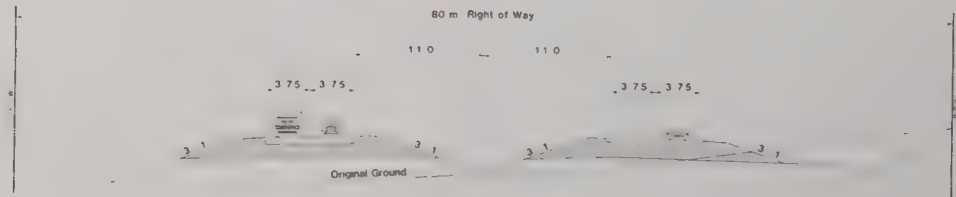
Exhibit 4.2

Interchange / Intersection Stages

Proposed Cross - Section

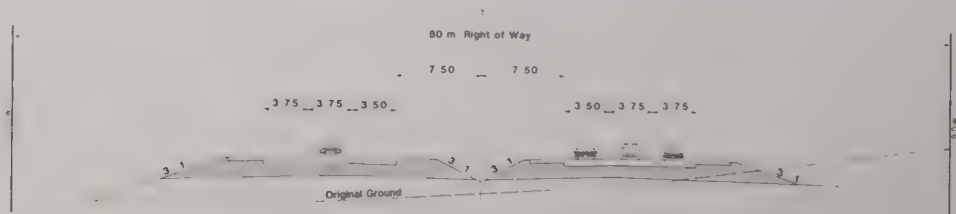


POSSIBLE INITIAL STAGE (2-LANES)



INTERIM STAGE (4-LANES)

Could be constructed as an arterial (with at grade intersections) or a freeway (with full interchanges)



ULTIMATE FREEWAY SECTION (6 - LANES)

Widening in the centre could be possible to provide 8 lanes

Highway 6 (New)

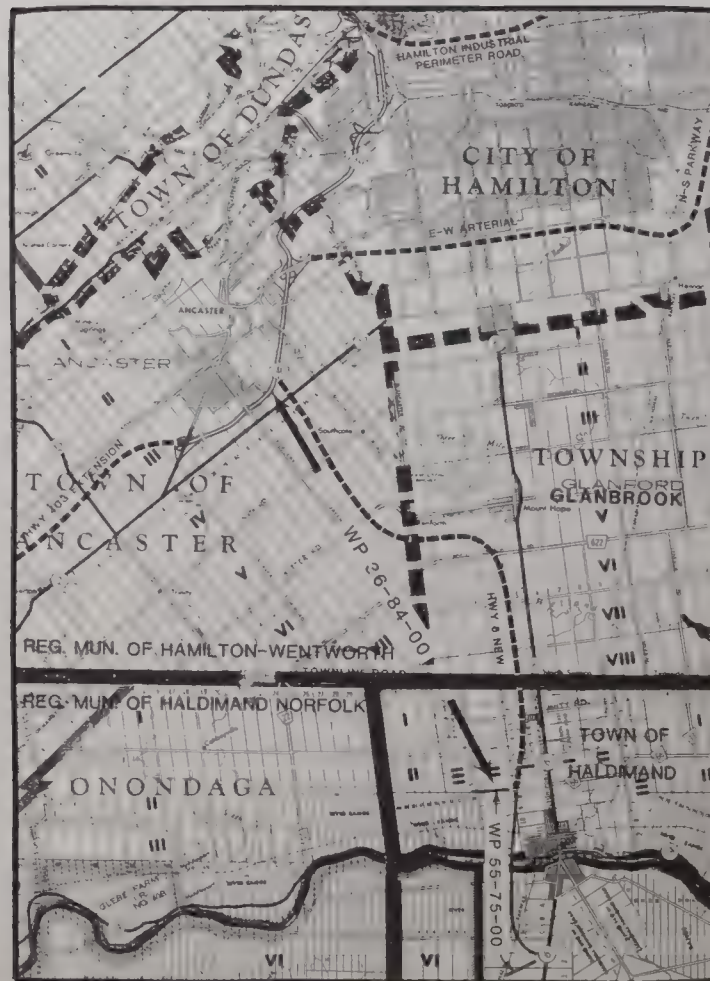
HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

Exhibit 4.3

Proposed Cross-Section

5. Design Criteria



MAP TO ACCOMPANY DESIGN CRITERIA
WP 36-84-00 HIGHWAY 6 NEW



PRELIMINARY
DESIGN CRITERIA

JULY, 1987

WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6 (New) TYPE OF PROJECT G.D.G.B.P. & Str.

LOCATION Highway 403 to Caledonia By-pass LENGTH 16.2 km +

LIMITS FROM STA. 9+050 PLAN B-85-6N TO STA. 25+280 PLAN B-143-6N (a)
Municipalities (b)

ULTIMATE STAGE (C)

PRESENT DESIGN PROPOSED
CONDITIONS STANDARDS STANDARDS

HIGHWAY CLASSIFICATION
MINIMUM STOPPING SIGHT DISTANCE
EQUIVALENT MINIMUM "K" FACTOR
GRADES MAXIMUM
MINIMUM RADII'S
PAVEMENT WIDTH
SHOULDER WIDTH
SHOULDER ROUNDING
MEDIAN WIDTH
ROW WIDTH
POSTED SPEED
MISCELLANEOUS

| | | |
|----|--------|--------|
| N | RFD12 | RFD12 |
| 0 | 245 | 245 |
| T | 120 | 120 |
| 3% | 3% | 3% |
| A | 650 | 650 |
| P | 2 x 11 | 2 x 11 |
| P | 3.0 RT | 3.0 RT |
| L | 2.5 RT | 2.5 RT |
| 1 | 1.0 | 1.0 |
| C | 15.0 | 15.0 |
| A | 100 | 80 |
| B | 100 | 100 |
| L | | |
| E | | |

DISTRICT ENGINEER

REGIONAL MANAGER
ENGINEERING AND RIGHT OF WAY

REGIONAL MANAGER
CONSTRUCTION

REGIONAL DIRECTOR
PLANNING

REGIONAL DIRECTOR
DEVELOPMENT

REGIONAL DIRECTOR
TRANSPORTATION

REGIONAL DIRECTOR
HIGHWAYS

REGIONAL DIRECTOR
TRUCKING

REGIONAL DIRECTOR
AIRPORTS

REGIONAL DIRECTOR
RAILWAYS

REGIONAL DIRECTOR
WATERWAYS

REGIONAL DIRECTOR
LAND USE

REGIONAL DIRECTOR
ENVIRONMENT

REGIONAL DIRECTOR
CULTURAL HERITAGE

REGIONAL DIRECTOR
RECREATION

REGIONAL DIRECTOR
HISTORIC PRESERVATION

REGIONAL DIRECTOR
ARCHAEOLOGY

REGIONAL DIRECTOR
PARKS AND RECREATION

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NATURAL HERITAGE

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BIODIVERSITY

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WILDLIFE

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FISH AND WILDLIFE

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REGIONAL DIRECTOR
WATER PROTECTION



WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6(New)

NOTES:

- a) Plan Numbers: B - 85 - 6N - 3, 4, 5
B - 142 - 6N - 1, 2
B - 143 - 6N - 1

- b) Municipalities: Townline Road is the boundary between the Regional Municipalities of Hamilton-Wentworth and Haldimand-Norfolk

Regional Municipality of Hamilton-Wentworth:

1. Town of Ancaster
2. Township of Glanbrook
3. City of Hamilton

Regional Municipality of Haldimand-Norfolk:

1. Town of Haldimand

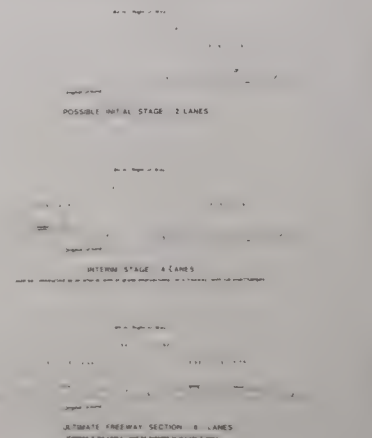
- c) It is anticipated that there will be three stages of development for Highway 6 (New):
1. Initial Stage - two 3.75 m lanes, undivided (future northbound lanes) with 0.5 m partially paved shoulders
 2. Interim Stage - two 3.75 m lanes in each direction with a 22 m median
 3. Ultimate Stage - two 3.75 m lanes plus one 3.5 m lane in either direction with a 15 m median

In the initial stage the northbound lanes will be built first. Widening from the interim to the ultimate will take place within the median.

See Exhibit 2 (page 4) for detailed typical sections.
See Exhibit 3 (page 5) for interchange/intersection stages.

- d) An 80 m ROW was used rather than a standard 100 m ROW to minimize the taking of agricultural land.

Proposed Cross-Section



Highway 6 (New)

Exhibit 2

Proposed Cross Section



WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6(New)

REMARKS

1. Purpose

The purpose of this work project is to prepare preliminary design plans for Highway 6 (New) from Highway 403 to the Caledonia By-pass and to provide a calculated alignment to enable the project to proceed to predesign. An Environmental Assessment Report, One-Stage Submission, will be submitted to the Ministry of the Environment for approval to allow the Ministry to designate lands for, construct and operate Highway 6 (New).

2. Scale

The preliminary design has been prepared in metric units at a scale of 1:2000.

3. Adjacent Projects

WP 55-75-00 Highway 6 Caledonia to Nanticoke
Preliminary Design Report
First stage, two-lane by-pass from Highway 6
to Greens Road constructed
Ultimate facility is four lanes

4. Structures

See Exhibits 4, 5 and 6 (pages 7, 8 and 9).

Structural Reference Description

| Number | Description |
|--------|---|
| 1 | Highway 6 (New) over Highway 403 |
| 2 | W-S Ramp over E-EW Ramp, Highway 403 Interchange |
| 3 | Highway 6 (New) over Highway 53 |
| 4 | Book Road over Highway 6 (New) |

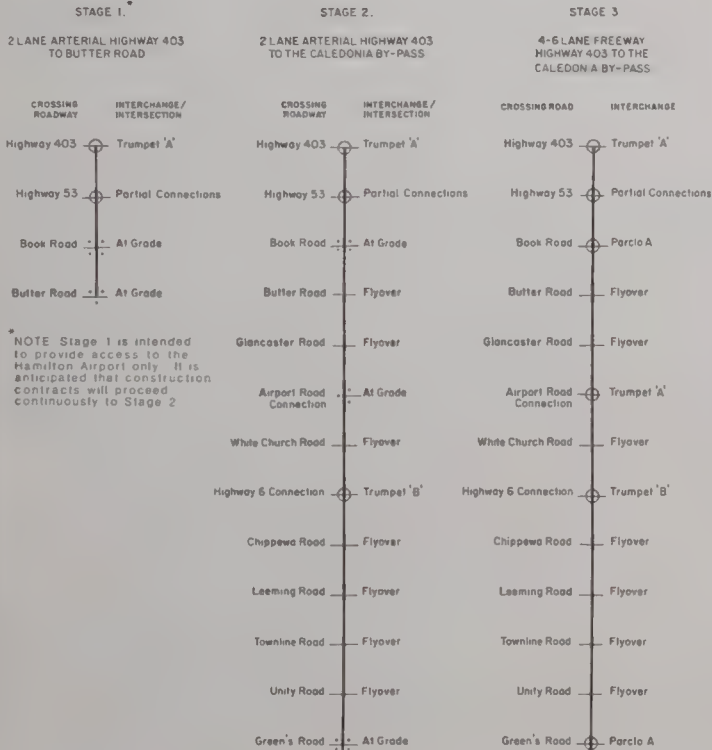


Exhibit 3

Highway 6 (New)
HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

Interchange / Intersection Stages

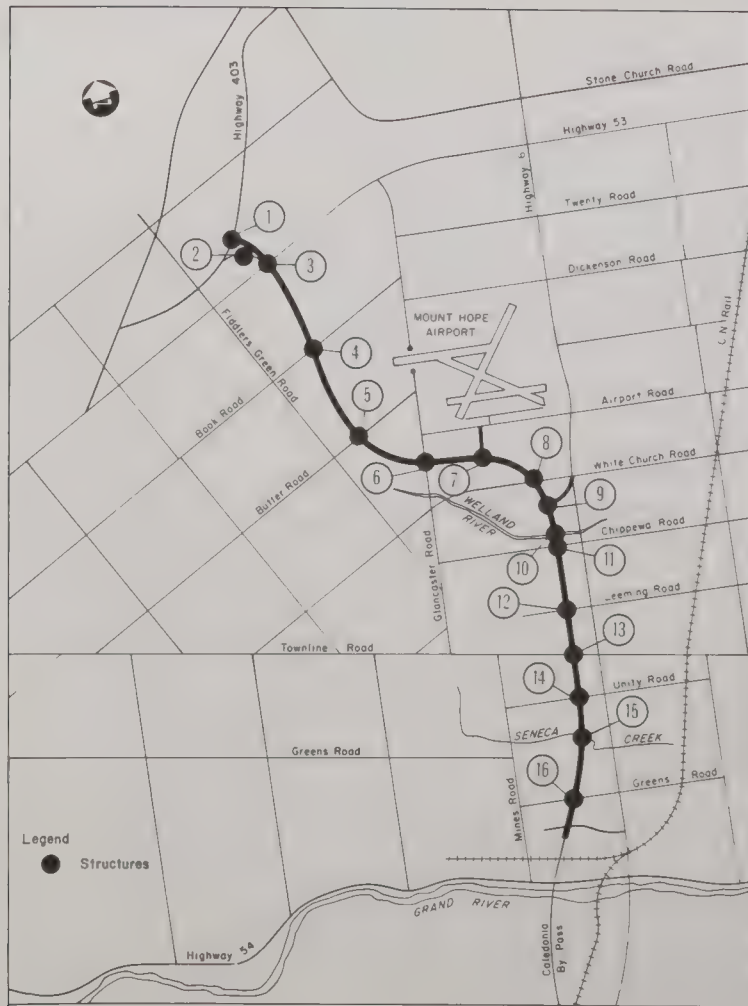
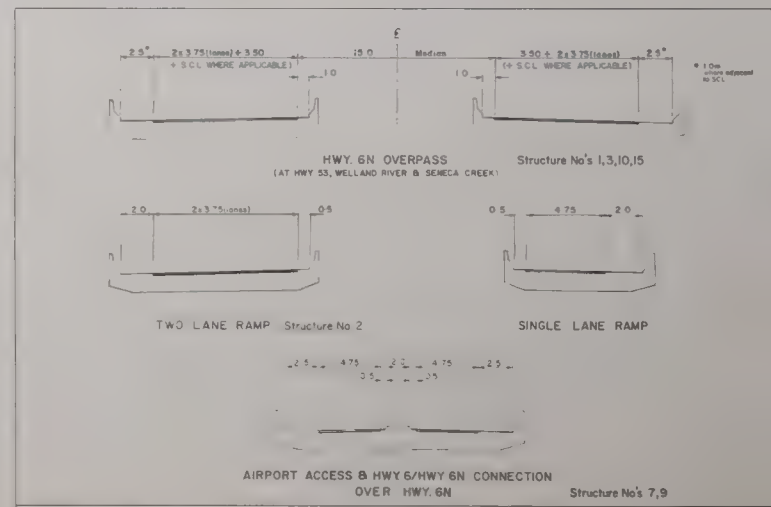


Exhibit 4



Highway 6 (New)

Exhibit 5

Typical Structure Sections



WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6(New)

4. Structures (continued)

- | | |
|----|--|
| 5 | Butter Road over Highway 6 (New) |
| 6 | Glancaster Road over Highway 6 (New) |
| 7 | Airport Road Connection over Highway 6 (New) |
| 8 | White Church Road over Highway 6 (New) |
| 9 | Highway 6 Connection over Highway 6 (New) |
| 10 | Welland River Crossing |
| 11 | Chippewa Road over Highway 5 (New) |
| 12 | Leeming Road over Highway 6 (New) |
| 13 | Townline Road over Highway 6 (New) |
| 14 | Unity Road over Highway 6 (New) |
| 15 | Seneca Creek Crossing |
| 16 | Greens Road over Highway 6 (New) |

(Numbers 1 and 3 are possible twin structures.)

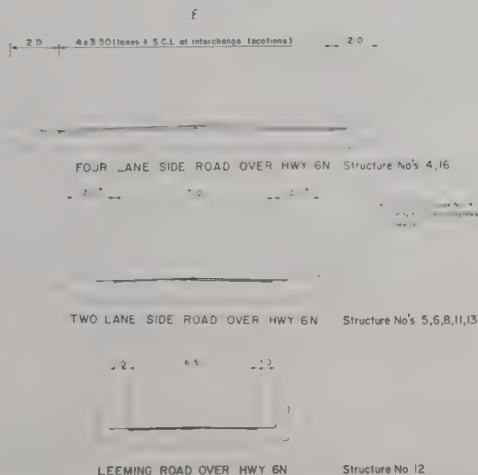
5. Interchanges

- 1) Highway 403/Highway 6 (New)/Highway 53 Interchange.

A trumpet "A" interchange is proposed between Highway 403 and Highway 6 (New) with all movements.

Partial ramps are provided at Highway 53 for movements to and from the east on Highway 403.

There will be no change to the vertical or horizontal alignment of Highway 403.





WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6(New)

- 2) Book Road (Parclo A) under the jurisdiction of the Town of Ancaster.

| | Present Conditions | Proposed Standards |
|---------------------------------|----------------------------|----------------------------|
| Highway Classification | Rural Collector | RAU 80 |
| Minimum Stopping Sight Distance | 70 m | 135 m |
| Equivalent Minimum K Factor | Sag K=10 m Crest K=10 m | Sag K=30 m Crest K=35 m |
| Grades Maximum | 4% | 5% |
| Minimum Radius | Tangent | Tangent |
| Pavement Width | 2x3.0 m | 4x3.5 m |
| Shoulder Width | 1 m | 2.5 m |
| Median Width | N/A | N/A |
| ROW Width | 20 m | 30 m |
| Posted Speed | 80 km/h | 80 km/h |

- 3) Airport Road Connection (Trumpet A) - Under the jurisdiction of the Ministry of Transportation and Communications to Airport Road.

| | Present Conditions | Proposed Standards |
|---------------------------------|--------------------|----------------------------|
| Highway Classification | N O T | RAU 80 |
| Minimum Stopping Sight Distance | | 135 m |
| Equivalent Minimum K Factor | A P P L | Sag K=30 m Crest K=35 m |
| Grades Maximum | I C | 5% |
| Minimum Radius | A | R=1000 m |
| Pavement Width | B | 4x3.5 m |
| Shoulder Width | L | 2.5 m |
| Median Width | E | N/A |
| ROW Width | | 30 m |
| Posted Speed | | 80 km/h |



WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6(New)

- 4) Highway 6 Connection (Trumpet B) - Under jurisdiction of the Ministry of Transportation and Communications.

| | Present Conditions | Proposed Standards |
|---------------------------------|--|----------------------------|
| Highway Classification | N O T | RAU 80 |
| Minimum Stopping Sight Distance | | 135 m |
| Equivalent Minimum K Factor | A P P L I C A B L E | Sag K=30 m Crest K=35 m |
| Grades Maximum | | 5% |
| Minimum Radius | | R=1000 m |
| Pavement Width | | 4x3.5 m |
| Shoulder Width | | 2.5 m |
| Median Width | | N/A |
| ROW Width | | 30 m |
| Posted Speed | | 80 km/h |

- 5) Greens Road (Parclo A) - Under the jurisdiction of the Regional Municipality of Haldimand-Norfolk.

| | Present Conditions | Proposed Standards |
|---------------------------------|--------------------------|----------------------------|
| Highway Classification | Rural Collector | RAU 80 |
| Minimum Stopping Sight Distance | 70m | 135 m |
| Equivalent Minimum K Factor | Sag K=10m Crest K=10m | Sag K=30 m Crest K=35 m |
| Grades Maximum | 1% | 5% |
| Minimum Radius | Tangent | Tangent |
| Pavement Width | 2x3.0 m | 4x3.5 m |
| Shoulder Width | 1 m | 2.5 m |
| Median Width | N/A | N/A |
| ROW Width | 20 m | 30 m |
| Posted Speed | 80 km/h | 80 km/h |



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6(New)

6. Sideroads

1) Highway 53

Highway 6 (New) will cross over Highway 53.

Ramps will be provided to and from the east on Highway 403 at Highway 53.

2) Butter Road (Two-lane Overpass)

Under the jurisdiction of the Regional Municipality of Hamilton-Wentworth.

Butter Road will require a minor realignment to the south to maintain access to private driveways in the area. A short section will remain as a cul-de-sac.

3) Glancaster Road (Two-lane Overpass)

Boundary Road between Township of Glanbrook and Town of Ancaster.

No change in alignment is required.

4) Whitechurch Road (Two-lane Overpass)

Under the jurisdiction of the Regional Municipality of Hamilton-Wentworth.

A minor realignment of Whitechurch Road is required to accommodate private driveway access. A cul-de-sac will be created on the west side of Highway 6 (New) to serve a farmstead.



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6(New)

5) Chippewa Road (Two-lane Overpass)

Under the jurisdiction of the Township of Glanbrook.

No changes in the alignment are required.

6) Leeming Road (Two-lane Overpass)

Under the jurisdiction of the Township of Glanbrook.

No changes in the alignment are required.

7) Townline Road (Two-lane Overpass)

Boundary Road between Region of Hamilton-Wentworth and Region of Haldimand-Norfolk.

No changes in the alignment are required.

8) Unity Road (Two-lane Overpass)

Under the jurisdiction of the Town of Haldimand.

No changes to the alignment of Unity Road are required.

Sidewalks will be provided.

7. Illumination

Specific illumination requirements are to be determined during detailed design. Preliminary recommendations are for full illumination at intersections, interchanges and major decision points in accordance with present MTC standards.



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6(New)

8. Environmental

This is a "Group A(a) - new routes" category project. An individual one-stage environmental assessment is required which will be subject to the full review and approval process under the Environmental Assessment Act. This project may not proceed until approval has been received from the Ministry of the Environment. Following this approval, Design and Construction Report(s) will be prepared as required to document the detailed design and contract document portion of the undertaking.

Environmentally significant areas/issues include: Noise, Agriculture, Unity Road, White Church Road, Book Road, and Property.

9. Watercourse Crossings

Major crossings are of the Welland River and Seneca Creek. These crossings have been reviewed with the Conservation Authorities. Preliminary culvert sizing has been completed to ensure compatibility with the recommended profile. Location of watercourse crossings have been selected to minimize the impact on upstream and downstream watercourses.

10. Drainage

Drainage design in accordance with MTC standards will be undertaken at the time of detail design. The profile has been set to accommodate drainage at a preliminary design level of detail.

11. Railway Grade Crossings

There are no railway crossings on Highway 6 (New).

12. Transit

There are no special provisions for transit.



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO. 36-84-00 DIST NO. 4 HWY NO. 6(New)

13. Signing

Detailed signing schemes will be prepared during detail design.

14. Traffic Signals

In the initial stage, at-grade intersections will be provided at Book Road, Airport Road connection, the intersection of Highway 6 connection and existing Highway 6 and Greens Road. Traffic signals will be provided at these intersections when warranted.

15. Designations and Transfers

A CAH designation will be placed on Highway 6 (New) throughout this project.

After construction of Highway 6 (New) it is expected that existing Highway 6, between Hamilton and Caledonia, will be transferred to the Regional Municipality of Haldimand-Norfolk and the Regional Municipality of Hamilton-Wentworth. This will be negotiated during the detail design phase.

16. Sidewalks

Sidewalks will be provided on the structure at Unity Road, due to its proximity to the Seneca Unity School.



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6 (New)

17. Closings

No OMB road closings are required.

18. Landscaping

A detailed landscaping plan will be developed during final design.

19. Patrol Yards

No patrol yards are proposed.

20. Utilities

There are three crossings of Ontario Hydro power lines. The crossing south of Butter Road will require extensive plant modification. The crossings north of Book Road and north of Chippewa Road may require the relocation of one tower.

The alignment crosses an Inter Provincial Pipeline between Airport Road and White Church Road.

Other utilities are either unaffected or require minor modification only.

21. Report Preparation

An Environmental Assessment Report will be prepared, including a technical appendix containing the preliminary design plans.



PRELIMINARY
DESIGN CRITERIA

WORK PROJECT NO 36-84-00 DIST NO 4 HWY NO 6 (New)

22. Public Participation

A full public participation program was conducted with three series of Public Information Centres held throughout the Study.

23. Detail Design Criteria

Separate Detail Design Criteria will be submitted to the HODCRC for approval of the individual Work Projects.

24. Presentations

Approval received for the Recommended Alignment from the SPC and the Minister during presentations on 21 October, 1986.

MANAGEMENT REVIEW COMMITTEE MEETING- JULY 21, 1987

Management Review Committee endorsed this Preliminary Design Criteria at the above meeting.

6. Drainage

A conceptual drainage analysis was undertaken to:

- i) identify the approximate number and location of crossings;
- ii) determine the level of protection (return period) to be provided.

In order to identify the approximate number and location of crossings, a minimum height of fill to convey runoff under Highway 6 (New) was established at 2 m. The proposed road alignment was reviewed to establish the location of existing watercourses. The alignment crosses 91 watercourses. The catchment areas vary in size varied from 0.1 to 1900 ha. However, most are very small with 60 being less than 10 ha and 22 ranging between 10 and 100 ha. Only nine watercourses are greater than 100 ha.

The proposed road profile was adjusted to minimize changes to existing drainage areas and watercourses. Riparian rights were maintained and existing Conservation Authority boundaries are unaltered.

The conceptual drainage scheme shown on Exhibit 6.1 includes 22 watercourse crossings. Many of the smaller watercourses were combined to reduce the number of actual crossings. The number and location of crossings may be changed during final design.

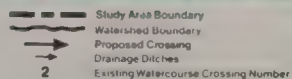
Watercourse crossings will be sized in accordance with MTC Directive B100, to convey peak discharge convey peak runoff rates which could occur, on average, once every 50 years. Preliminary rates are shown on Table 6.1. The level of protection may be increased at locations where flood damages cannot be tolerated. However, most of the study area is rural in nature and potential flood damage is not a significant issue.

Local municipalities and conservation authorities were contacted for review and comments on the proposed drainage scheme.



Highway 6 (New)

THAMINION TO CALEDONIA
Environmental Assessment and Engineering Study Report



Recommended Alignment

Source: Ontario Ministry of Transportation and Communications
Rem. to Sensing Unit
April 1985

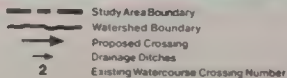
Exhibit 6.1(a)

Conceptual Drainage Schematic



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report



Recommended Alignment

Source: Ontario Ministry of Transportation and Communications,
Remote Sensing Unit
April 1986

Exhibit 6.1(b)

Conceptual Drainage Schematic



Exhibit 6.1 (c)

Conceptual Drainage Schematic

TABLE 6.1
WATERCOURSE CROSSINGS - EXISTING AND PROPOSED

| <u>Watercourse Crossing Number</u> | <u>Existing Upstream Drainage Area (ha)</u> | <u>Highway 6 (New) Crossing</u> | <u>Combined Upstream Drainage Area (ha)</u> | <u>Preliminary Peak Discharge Rate 50-Year Return Period (m³/s)</u> |
|--|---|---------------------------------|---|--|
| 1 | 5.3 | Yes | 8.4 | 0.9 |
| 2 | 2.9 | | | |
| 3 | 0.2 | | | |
| 4 | 0.5 | | | |
| 5 | 9.1 | | | |
| 6 | 27.5 | Yes | 37.1 | 4.2 |
| 7 | 3.2 | | | |
| 8 | 3.2 | | | |
| 9 | 1120.9 | Yes | 1137.2 | 25.0 |
| 10 | 2.2 | | | |
| 11 | 0.1 | | | |
| 12 | Ditch | | | |
| 13 | 0.9 | | | |
| 14 | 15.1 | | | |
| 15 | 166.0 | Yes | 166.0 | 7.4 |
| 16 | 1.6 | Yes | 2.9 | 0.4 |
| 17 | 1.3 | | | |
| 18 | 6.6 | | | |
| 19 | 30.5 | Yes | 35.8 | 2.6 |
| 20 | 2.6 | | | |
| 21 | 34.0 | | | |
| 22 | 14.4 | Yes | 51.0 | 3.3 |
| 23 | 1.3 | | | |
| 24 | 34.4 | Yes | 35.7 | 2.5 |
| 25 | 1872.8 | Yes | 1869.4 | 41.0 |
| 26 | 1.0 | | | |
| 27 | 1.4 | | | |
| 28 | 1.0 | | | |
| 29 | 42.6 | | | |
| 30 | 193.2 | Yes | 220.8 | 9.5 |
| 31 | 0.8 | | | |
| 32 | 0.2 | | | |
| 33 | 1.0 | | | |
| 34 | 1.8 | | | |
| 35 | 63.4 | | | |
| 36 | 14.0 | | | |
| 37 | 34.5 | Yes | 51.3 | 3.6 |
| 38 | 16.8 | | | |
| 39 | 0.1 | | | |
| 40 | 1.0 | | | |
| 41 | 0.7 | | | |
| 42 | 0.7 | | | |
| 43 | 0.3 | | | |
| 44 | 0.5 | | | |
| 45 | 34.3 | | | |
| 46 | 2.1 | Yes | 39.7 | 3.0 |
| 47 | 16.5 | Yes | 17.4 | 1.5 |
| 48 | 0.9 | | | |
| 49 | 1.8 | | | |

TABLE 6.1
WATERCOURSE CROSSINGS - EXISTING AND PROPOSED
(continued)

| <u>Watercourse Crossing Number</u> | <u>Existing Upstream Drainage Area (ha)</u> | <u>Highway 6 (New) Crossing</u> | <u>Combined Upstream Drainage Area (ha)</u> | <u>Preliminary Peak Discharge Rate 50-Year Return Period (m³/s)</u> |
|--|---|---------------------------------|---|--|
| 50 | 76.1 | | | |
| 51 | 7.5 | Yes | 85.4 | 4.7 |
| 52 | 50.4 | | | |
| 53 | 1.2 | Yes | 51.6 | 3.4 |
| 54 | 12.0 | | | |
| 55 | 2.2 | | | |
| 56 | 428.0 | | | |
| 57 | 7.4 | | | |
| 58 | 77.0 | Yes | 497.8 | 16.5 |
| 59 | 1.5 | | | |
| 60 | 0.8 | | | |
| 61 | 2.2 | | | |
| 62 | 0.4 | | | |
| 63 | 6.3 | | | |
| 64 | 18.9 | Yes | 24.1 | 1.9 |
| 65 | 3.6 | | | |
| 66 | 9.6 | | | |
| 67 | 3.3 | | | |
| 68 | 0.6 | | | |
| 69 | 1.3 | | | |
| 70 | 15.8 | Yes | 220.3 | 9.5 |
| 71 | 0.7 | | | |
| 72 | 0.5 | | | |
| 73 | 0.7 | | | |
| 74 | 2.6 | | | |
| 75 | 66.0 | | | |
| 76 | 58.0 | | | |
| 77 | 0.4 | | | |
| 78 | 2.0 | Yes | 5.5 | 3.0 |
| 79 | 4.9 | | | |
| 80 | 38.1 | | | |
| 81 | 1.2 | | | |
| 82 | 0.2 | | | |
| 83 | 1.1 | | | |
| 84 | 14.7 | Yes | 14.7 | 1.4 |
| 85 | 0.8 | | | |
| 86 | 46.2 | Yes | 54.0 | 2.9 |
| 87 | 7.3 | | | |
| 88 | 1.0 | | | |
| 89 | 1.0 | | | |
| 90 | 4.5 | | | |
| 91 | 95.5 | Yes | 101.0 | 5.5 |

1. SOURCE: Crossing numbers and drainage areas were determined by Ontario Ministry of Transportation and Communications, Remote Sensing Unit, April 1986

NOTE: The proposed Highway 6 (New) alignment crosses 91 watercourses. At 22 of these locations, culverts or bridges may be constructed to convey runoff downstream. At the time of writing this report, the drainage scheme was conceptual and may be subject to change during final design.

7. Preliminary Soils Investigations

Appendix B includes preliminary soils investigations undertaken by the Ministry of Transportation and Communications. In total, 17 boreholes were drilled and analyzed, the resulting data are shown in the appendix.

The investigations identified no adverse soil conditions that would render any of the alternative alignments or designs infeasible. Therefore all alternative alignments were judged to be similar in terms of engineering and construction feasibility.

A significant portion of the route will be constructed over silty clay material. This is considered to be generally suitable as fill.

8. Alignment Calculations

Alignment calculations for Highway 6 (New) and sideroads are shown in Appendix C.

9. Cost Estimates

Preliminary construction cost estimates for the initial (two lane) stage of Highway 6 (New) are shown in Table 9.1. These were developed on the basis of major item quantity estimates and related unit prices. The unit prices were provided by the Ministry of Transportation and Communications and are 1987-based.

The structure costs included in the estimate are as follows:

- Highway 6 (New) over Highway 403
- Highway 6 (New) over Highway 53
- basket-weave between the W-S ramp and the E-E/W ramp at the Highway 403/Highway 6 (New) interchange
- Butter Road over Highway 6 (New)
- Glancaster Road over Highway 6 (New)
- White Church Road over Highway 6 (New)
- Highway 6 connection over Highway 6 (New)
- Highway 6 (New) over the Welland River
- Chippewa Road over Highway 6 (New)
- Leeming Road over Highway 6 (New)
- Townline Road over Highway 6 (New)
- Jnity Road over Highway 6 (New)
- Highway 6 (New) over Seneca Creek
- Greens Road over Highway 6 (New).

The total cost for a two-lane arterial is estimated to be \$33,200,000. The additional cost for a four-lane freeway is estimated to be \$15,000,000. Therefore, a four-lane freeway would cost approximately \$48,200,000.

TABLE 9.1
COST ESTIMATES

HIGHWAY 6 (NEW) - Two-Lane Initial Stage

Cost Estimate (1987 Cost)

| | <u>Units</u> | <u>Unit Cost</u> | <u>Quantity</u> | <u>Cost</u> |
|--|----------------|----------------------|-----------------|----------------------------|
| Grading - Excavation | m ³ | 3.00 | 705,313 | \$ 2,115,939 |
| - Fill Borrowed | m ³ | 4.00 | 1,001,059 | 4,004,236 |
| Granular 'A' | tonne | 8.00 | 218,709 | 1,749,672 |
| Granular 'B' | tonne | 5.50 | 457,704 | 2,517,372 |
| Asphalt - DFC (40) | tonne | 35.00 | 29,811 | 1,043,835 |
| - HL8 (100) | tonne | 20.00 | 63,534 | <u>1,270,680</u> |
| TOTAL MAJOR ITEMS | | | | \$12,701,284 |
| Drainage | | 10% | | 1,270,128 |
| Minor Items | | 15% | | <u>1,905,193</u> |
| TOTAL TENDER VALUE | | | | \$15,876,605 |
| Engineering | | 10% | | 1,587,661 |
| Material A/C - 5.5% of Hot Mix | | | | 1,334,840 |
| Sodding | | 3% | | <u>476,298</u> |
| TOTAL VALUE "GRADING" | | | | \$19,275,404 |
| Structures (14,514 m ² x \$750) | | | | 10,885,500 |
| Hydro Relocation | | | | <u>3,000,000</u> |
| TOTAL PROGRAM VALUE | | | | <u>\$33,160,904</u> |
| | | ROUNDED TOTAL | | <u>\$33,200,000</u> |

10. Initiate for Detailed Design

10.1 Commitments To Future Work

Table 10.1 shows the summary of commitments to future work identified in the Environmental Assessment Report. These commitments were made as part of the approval process for the Environmental Assessment Report and must be undertaken prior to construction. The sections below will expand on the future work required where applicable.

10.2 Utility Relocations

Hydro

Highway 6 (New) crosses Ontario Hydro 230 kV lines at three locations as follows:

- i) between Book Road and Highway 53 at Station 24+000;
- ii) south of Butter Road at Station 20+500;
- iii) between Chippewa and White Church Roads at Station 15+500.

All of these crossings have been discussed with Ontario Hydro and are determined to be feasible. Minor modifications to hydro plants may be required at crossings at Stations 24+000 and 20+500. The crossing immediately south of Butter Road at Station 20+500 will require realignment of the hydro line.

"Ball park" cost estimates were obtained from Ontario Hydro for the cost of any relocation required. No design or analysis was undertaken by Hydro beyond that needed to determine general feasibility.

Interprovincial Pipeline

A petroleum pipeline runs east-west, parallel to the Recommended Alignment between Glancaster Road and Highway 6.

Highway 6 (New) crosses the pipeline at approximately 17+150 and at the Airport Road interchange at Station 17+685.

TABLE 10.1
SUMMARY OF COMMITMENTS TO FUTURE WORK

| Issue/Concern | Identified as Environmentally Significant | Report Section | Future Work Proposed | Agencies/Groups Involved In Future Work | Comments |
|-------------------|---|----------------|---|---|---|
| NOISE | Yes | 6.3.2 | Detail design noise impact evaluations to re-evaluate mitigation required, including barrier at Highway 53 | Ministry of the Environment | Mitigation to be provided based upon MTC/MOE noise protocol. |
| AGRICULTURE | Yes | 6.3.3 | Access to be provided to new farm units created where feasible Landlocked parcels to be purchased by MTC and may be offered for sale to adjacent owners | Property Owners | Standard MTC practice. |
| UNITY ROAD | Yes | 6.3.4 | Investigate advanced tree planting | Haldimand/Norfolk Board of Education | To reduce visual impacts associated with the crossing, advanced tree planting will be investigated at the time of final design. |
| WHITE CHURCH ROAD | Yes | 6.3.5 | None required | N/A | Mitigation incorporated in design. |
| BOOK ROAD | Yes | 6.3.6 | Provide access to and fence historic abandoned human cemetery (Parkin); negotiations with Town to continue responsibility for maintenance | Town of Ancaster | Cemetery Act requirements for maintenance apply. |
| PROPERTY | Yes | 6.3.7 | Obtain residences prior to construction | Property Owners | Residences preferably obtained on a willing seller, willing buyer basis at fair market value. |
| VEGETATION | Yes | 4.2.4 6.3.7 | Vegetation specialists walk the centre line of proposed R-O-W at detailed design stage to locate any significant specimens Investigate tree removal strategy | Grand River C.A. Ministry of Natural Resources | Protection of regionally rare plant species. Minimize impacts to woodlots/forested areas where possible. |
| ARCHAEOLOGY | No | 4.3.4 | Additional field surveys, documentation and appropriate mitigation of impacts to be carried out prior to construction | Ministry of Citizenship and Culture | Preliminary survey already undertaken. |

TABLE 10.1
SUMMARY OF COMMITMENTS TO FUTURE WORK
(continued)

| Issue/Concern | Identified as Environmentally Significant | Report Section | Future Work Proposed | Agencies/Groups Involved In Future Work | Comments |
|---------------------------|---|----------------|--|---|--|
| LANDSCAPING | No | 4.3.3 | Landscaping at intersections and interchanges to be investigated at the time of final design | No further contact needed | |
| DRAINAGE/STREAM CROSSINGS | No | Appendix B | Undertake a detailed drainage study prior to construction, including extent of increase to volume and frequency of flow from storm events; appropriate mitigation to be determined Review stream crossings, fill permits and structures designs with MNR and Conservation Authority prior to construction | Ministry of Natural Resources Grand River C.A. Hamilton Region C.A. Niagara Peninsula C.A. | Preliminary drainage study undertaken. |
| WELL MONITORING | No | 6.3.3 6.3.5 | Well monitoring program to be investigated at the time of final design | Ministry of the Environment Property Owners Regional Health Unit | Preliminary review of effect to wells was undertaken. No significant impacts expected. |
| PRIVATE SEWAGE SYSTEM | No | Appendix B | Effects, if any, to individual tile beds will be dealt with in final design | Ministry of the Environment Regional Health Unit | Will be addressed, if necessary, in the Design and Construction Report. |
| WATERFOWL HABITATS | No | 4.2.5 | Measures to minimize disruption on waterfowl habitats during construction | Ministry of Natural Resources | Will be addressed in Design and Construction Report. |
| SOILS INVESTIGATIONS | No | Appendix B | Detailed soil investigation to be undertaken at time of final design | Ministry of Natural Resources | Preliminary soils investigation was undertaken. |
| SIGNING | No | Appendix B | Signing requirements to be determined at time of final design | Ministry of Tourism and Recreation | Standard MTC signing practice regarding tourism facilities will be employed. |

Exact locations of the pipeline must be confirmed prior to construction and National Energy Board approvals will be required for these crossings.

Union Gas

There is an 8 in. high pressure gas pipeline running northwesterly from the intersection of Unity Road and Highway 6 to Butter Road and beyond the Study Area boundary. Highway 6 (New) crosses this pipeline at approximately Station 12+500.

In addition, there is a 2 in. high pressure gas pipeline running along Unity Road at Highway 6 to Mines Road. Highway 6 (New) crosses this pipeline at approximately Station 12+150.

The locations of these pipelines must be confirmed prior to construction and any relocations or adjustments to the existing plant determined during design.

TransCanada Pipelines

TransCanada Pipelines is proposing a new line which will run east-west between Highway 53 and Book Road along the south limit of a Hydro right-of-way at approximately Station 24+00.

The status of this pipeline should be confirmed at the start of detailed design.

Bell Canada

There are no major Bell facilities affected by Highway 6 (New) and there are no major expansions planned. Minor adjustments to buried distribution of cables may be required and these should be confirmed prior to construction.

Municipal Services

Due to the rural nature of the Study Area municipal services exist in only a few locations. Those affected by Highway 6 (New) are within the Town of Ancaster along the north side of Highway 53. Services provided

are largely local in nature and relocation requirements should be confirmed during design.

10.3 Contract Limit Definition

In Chapter 4 of this Report, the proposed staging for Highway 6 (New) was discussed. It is proposed that Highway 6 (New) will be built in three longitudinal stages. The various alternatives for two, four and six lanes are available for cross sectional staging. Prior to construction the exact contract limits should be defined for these various stages.

10.4 Hydrology Study

Chapter 6 of this Report documents the preliminary drainage investigations undertaken as part of the Environmental Assessment Report and preliminary design process. Prior to construction, a detailed hydrology investigation must be undertaken for final watercourse crossing designs. These designs should be reviewed with the appropriate Conservation Authorities and the Ministry of Natural Resources as outlined in the commitment to future work.

10.5 Soils and Foundations

Chapter 7 documents the preliminary soils information conducted as part of the preliminary design process. Prior to construction a detailed soils and foundations investigation must be undertaken.

10.6 Transport Canada Requirements

A major component in the design of the interchange at Book Road was the long term requirements of Transport Canada for zoning, navigation and lighting in conjunction with the Hamilton Civic Airport. At the time of preliminary design, Transport Canada was projecting for a future expansion to a 10,000 foot runway from the existing 8,000 foot runway and all the Federal Government's requirements have been met. These requirements of Transport Canada should be reviewed in detail to determine if the design of Highway 6 (New) is compatible with the exact requirements at the time of detailed design. Of particular importance at the time of preliminary design were the height of lighting and sign structures at the interchange at Book Road.

10.7 Confirm Cross Sections of Crossing Roadways

At the time of the preparation of the Preliminary Design Report, there were no major roadway expansions planned within the Study Area. It was assumed that all crossing roadways would remain at their existing cross sections except those where interchanges were being provided. This should be confirmed with the area municipalities and the design modified where required.

10.8 Archaeology

A preliminary archaeological investigation was undertaken as part of the Environmental Assessment Report. This is documented in Chapter 4, Part I of this report. Additional field surveys and documentation will be required prior to construction.

Based on these surveys, mitigation will be recommended and will be undertaken as appropriate.

10.9 Warrant Calculations

The need for traffic control signals will depend on warrant calculations based on the most recent traffic volumes available.

10.10 Illumination

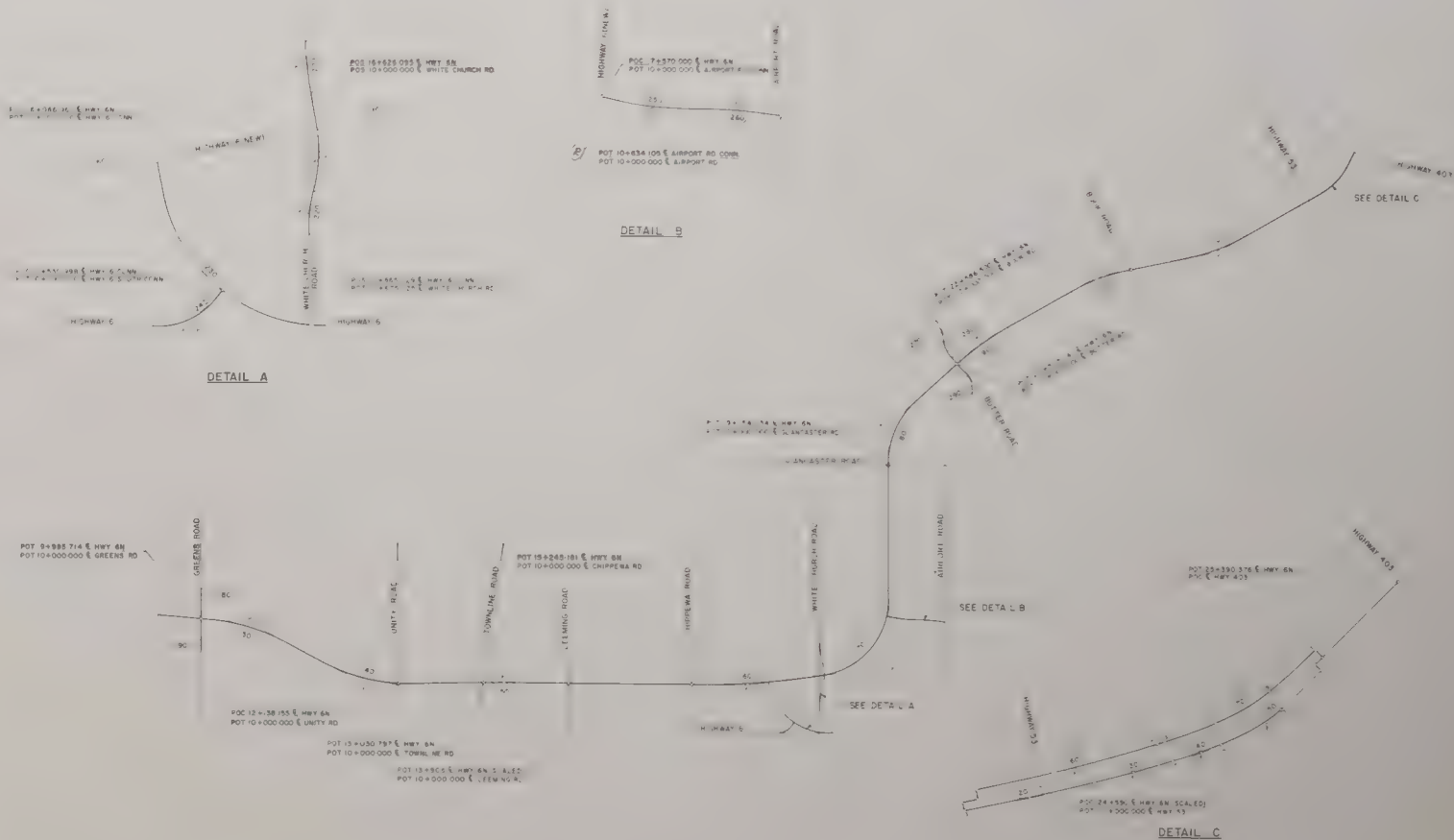
Illumination is required at all interchange/intersection and decision points. A complete illumination design must be undertaken with particular emphasis on the design at Book Road based on the zoning requirements of Transport Canada.

10.11 Signing

A comprehensive signing plan must be developed in accordance with Provincial standards.

APPENDIX A

Plans and Profiles



SCALE

NOT TO SCALE



Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

LEGEND



CURVE NUMBER

CALCULATED HORIZONTAL
ALIGNMENT
INITIAL AND ULTIMATE STAGES

EXHIBIT NUMBER

A



SCALE

NOT TO SCALE



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

KEY PLAN
INITIAL AND ULTIMATE STAGES

EXHIBIT NUMBER

A 1



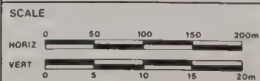
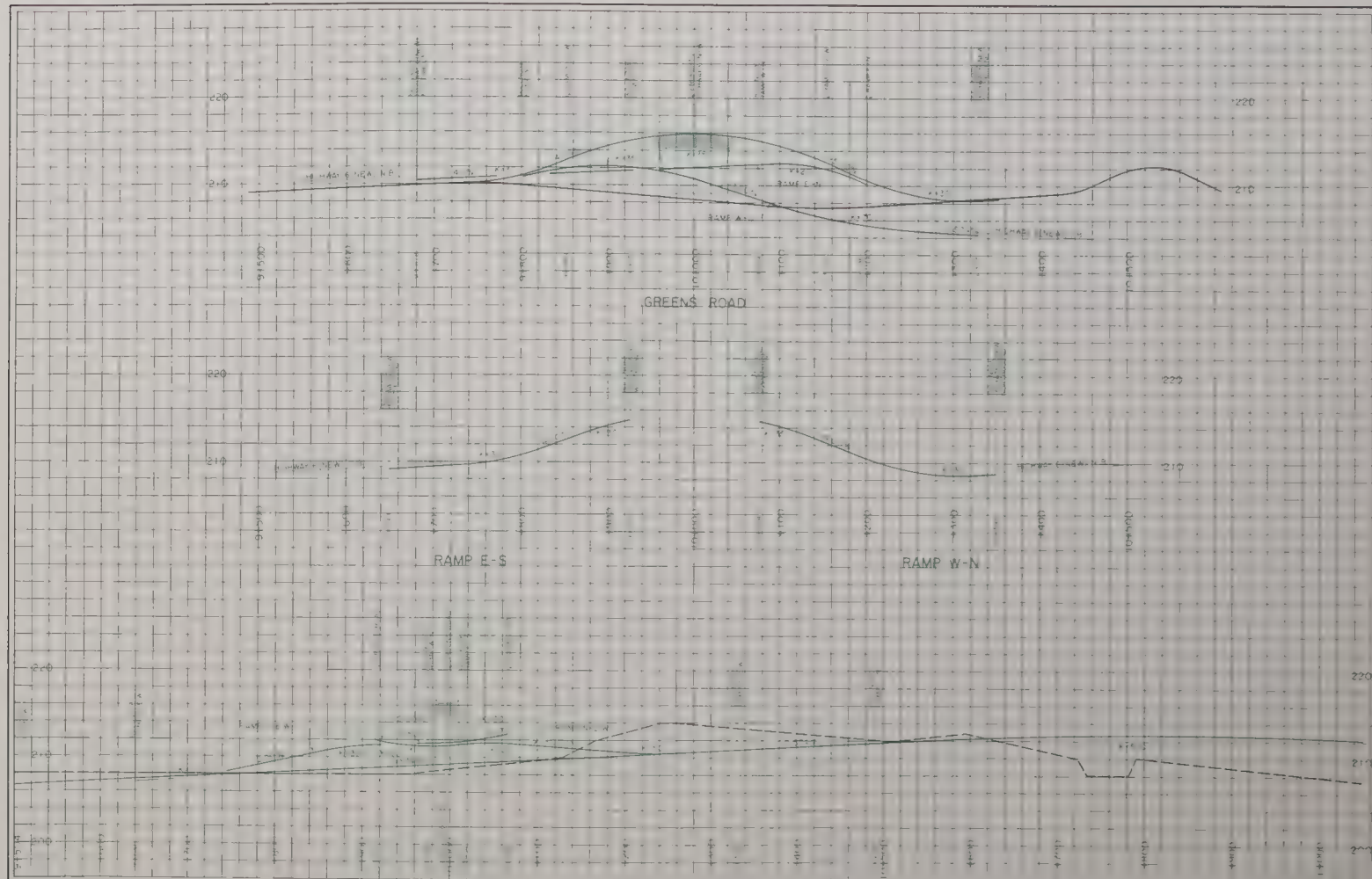
Highway 6 (New) HAMILTON TO CALEDONIA ROUTE LOCATION & PRELIMINARY DESIGN STUDY

- LEGEND
- PROPOSED ROW
 - PROPERTY LINE

Plan
 ULTIMATE STAGE
 STATION 9+300 TO 11+050
 W.P. 36-84-00

EXHIBIT NUMBER

A 2



Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

LEGEND:

— ORIGINAL GROUND
 — EXISTING GRADE
 — PROPOSED GRADE

Profile
 ULTIMATE STAGE
 STATION 9+504 TO 11+050
 W.P. 36-84-00

EXHIBIT NUMBER

A 3

FLEMING

MATFER

VARDA

SENECA CREEK

NEW

ROOPE

GARNER

BATES

LAMBERT

WALKERSHAW

CUTTS

SMITH

BOARD OF EDUCATION

SIMMONS

INTEL
CHURCH

MILLER

BATES

VARDA

MATFER

FLEMING

HIGHWAY 6

UNITY ROAD

STA 12+570

LOT 2

LOT 1

SCALE

HORIZ 0 50 100 150 200 m



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

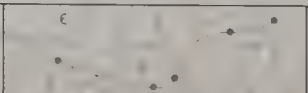
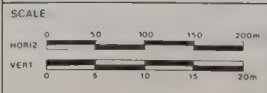
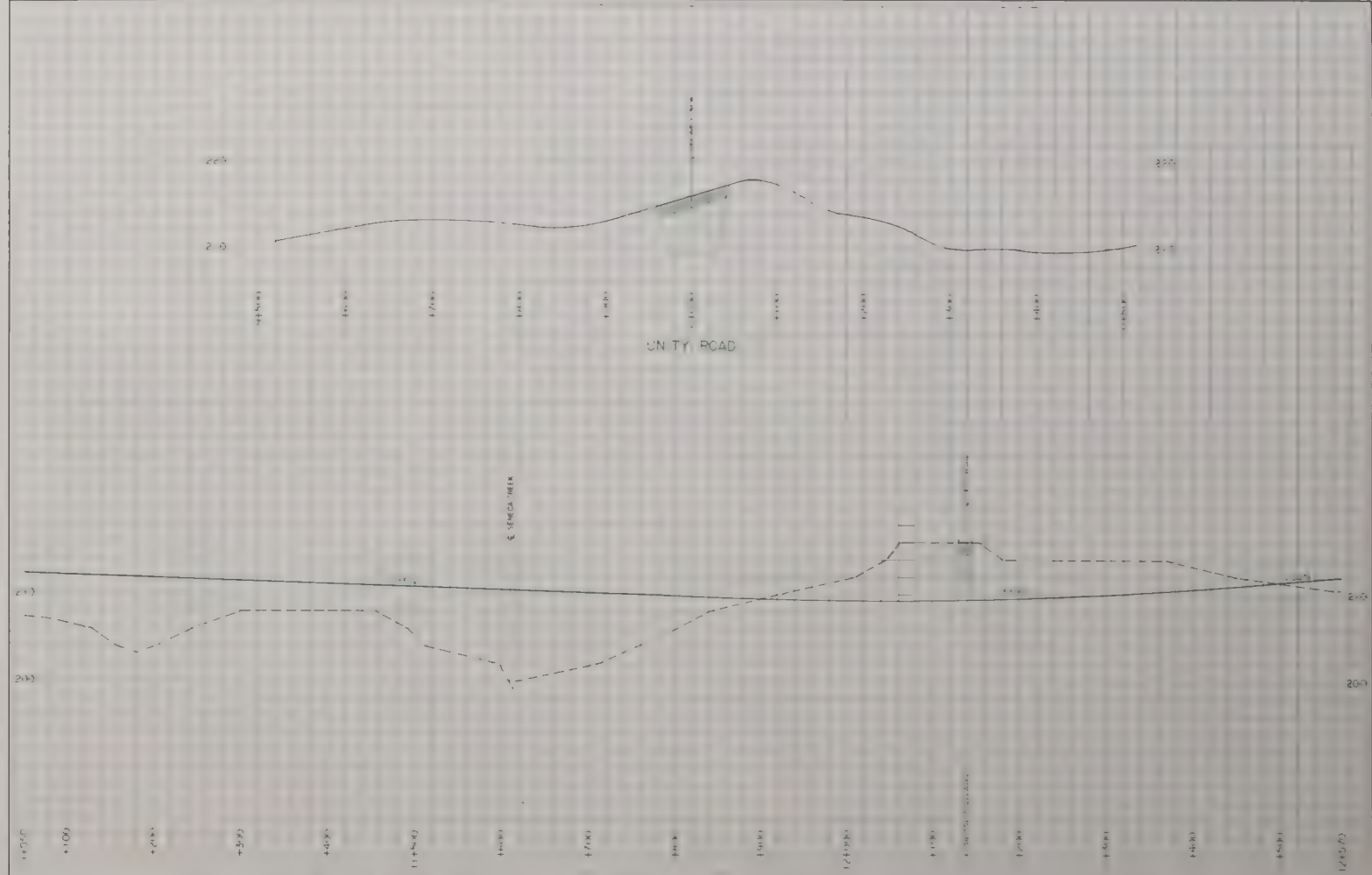
- PROPOSED ROW
- PROPERTY LINE

Plan

ULTIMATE STAGE
STATION 11+050 TO 12+570
W.P. 36 84-00

EXHIBIT NUMBER

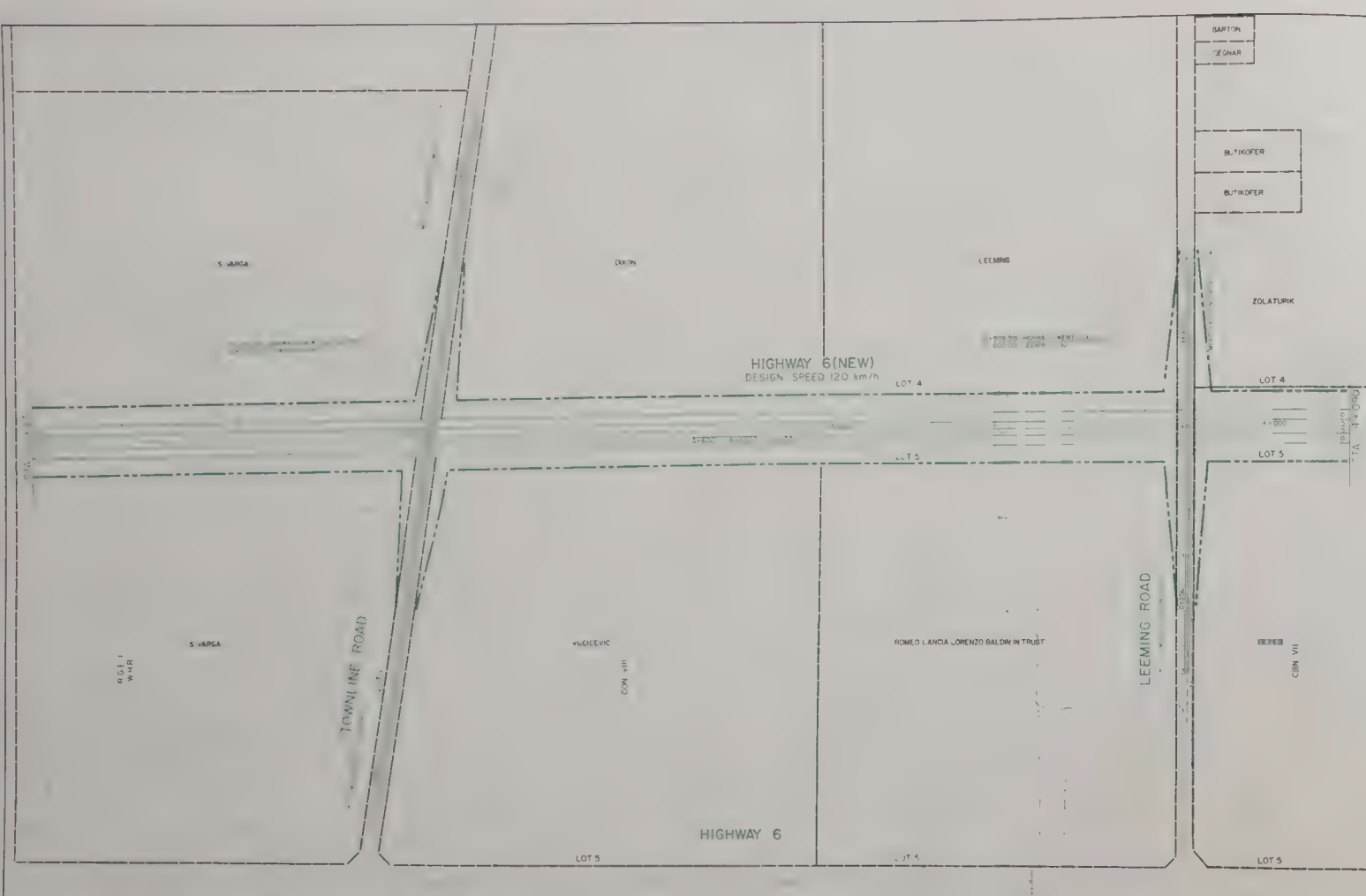
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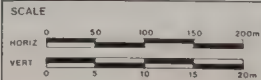
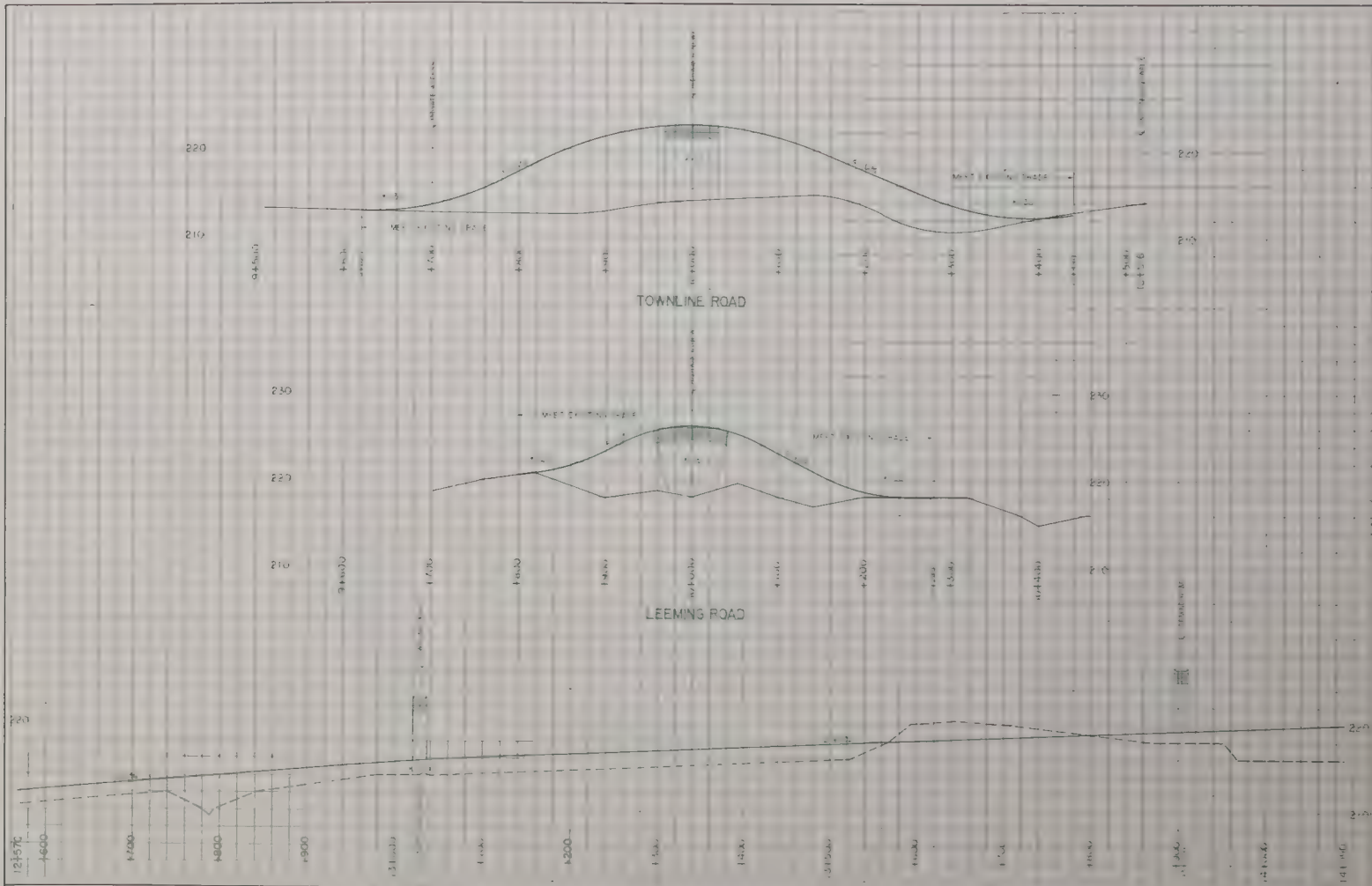


Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

Profile
 ULTIMATE STAGE
 STATION 11+050 TO 12+570
 W.P. 36-84 00

EXHIBIT NUMBER
A 5





Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

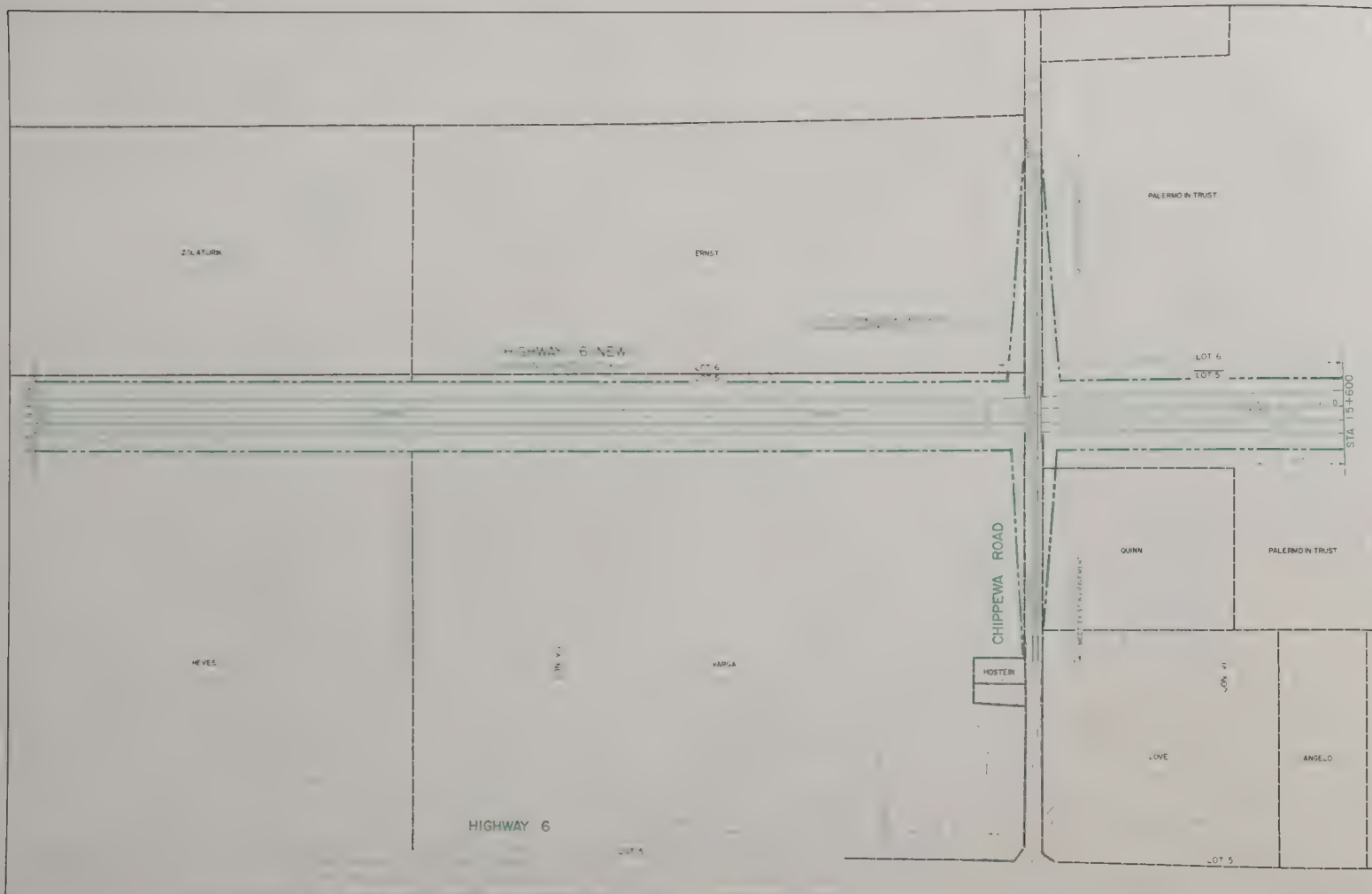
LEGEND

ORIGINAL GROUND
EXISTING GRADE
PROPOSED GRADE

Profile
ULTIMATE STAGE
STATION 12+570 TO 14+090
W.P. 36-84-00

EXHIBIT NUMBER

A 7



STA 15+600

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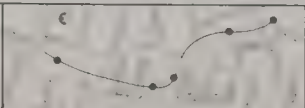
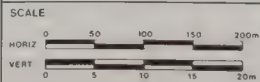
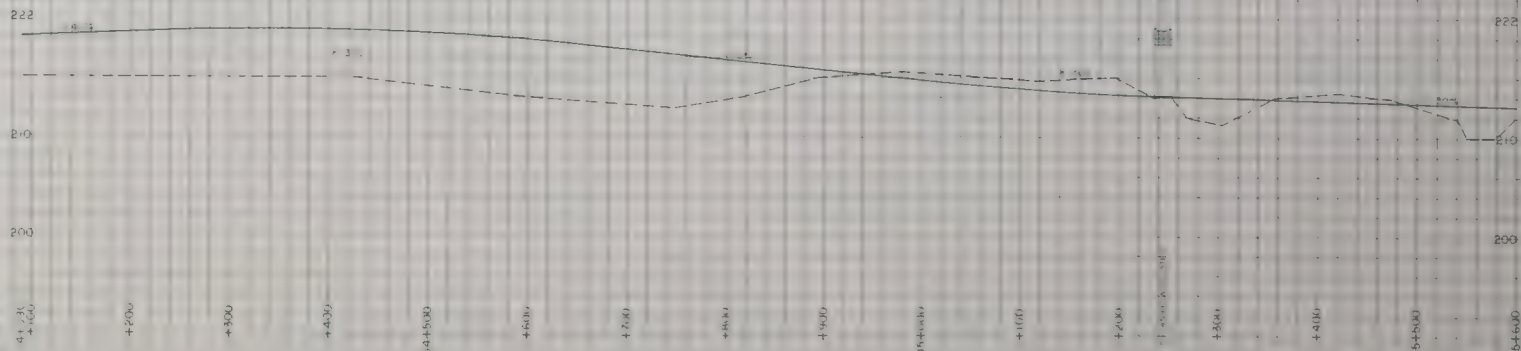
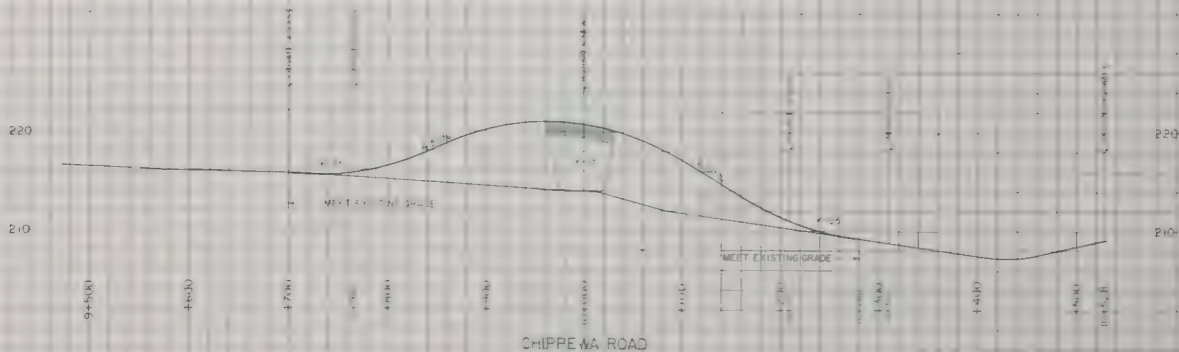
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Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

LEGEND

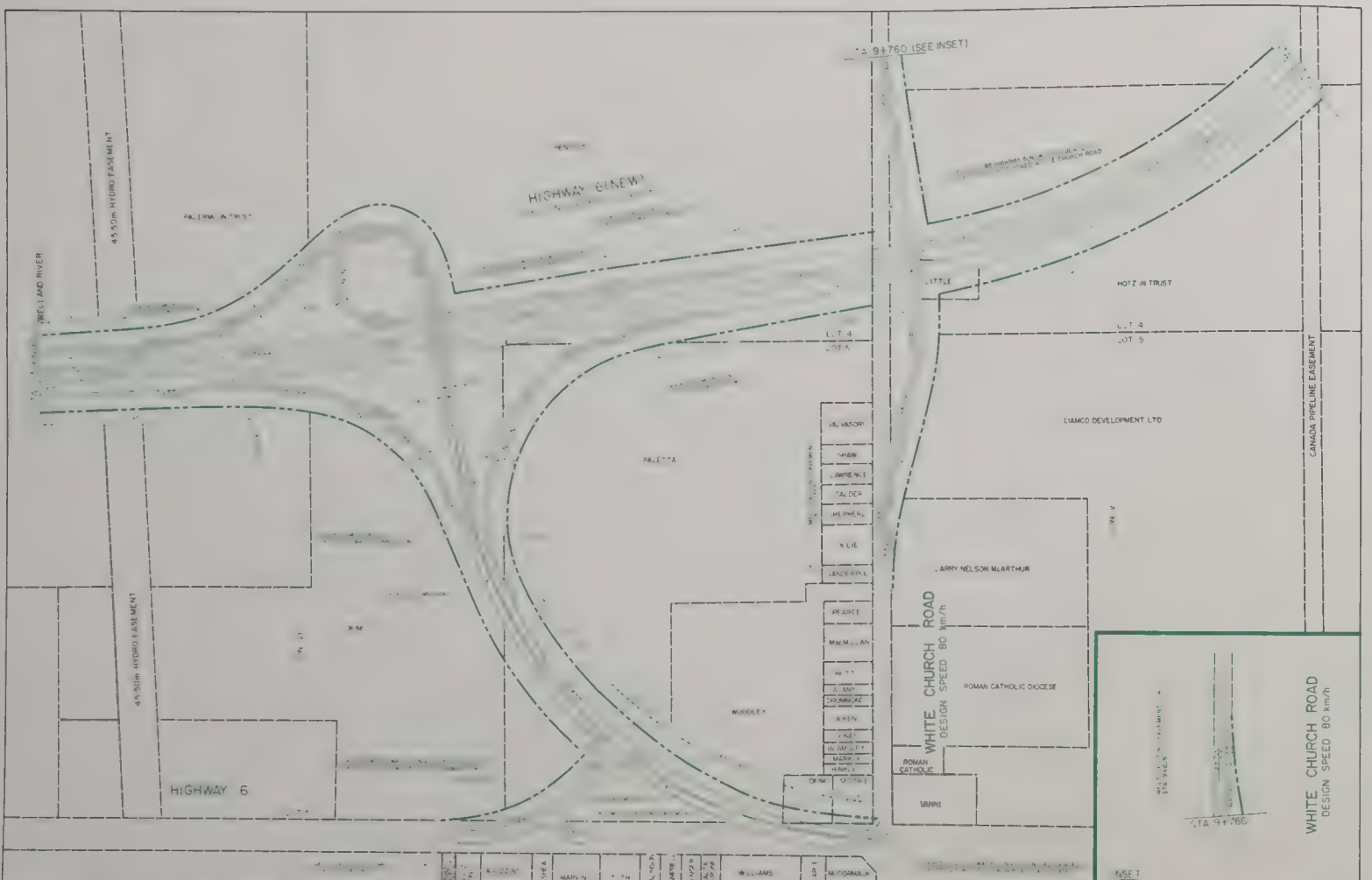
ORIGINAL GROUND
 EXISTING GRADE
 PROPOSED GRADE

Profile

ULTIMATE STAGE
 STATION 14+090 TO 15+600
 W.P. 36 84 00

EXHIBIT NUMBER

A 9



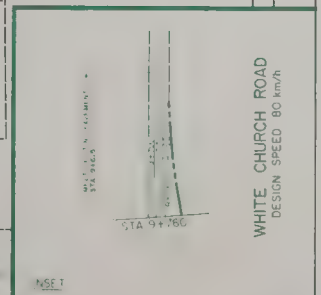
Highway 6 (New) **HAMILTON TO CALEDONIA** Environmental Assessment & Preliminary Design Report

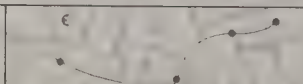
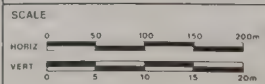
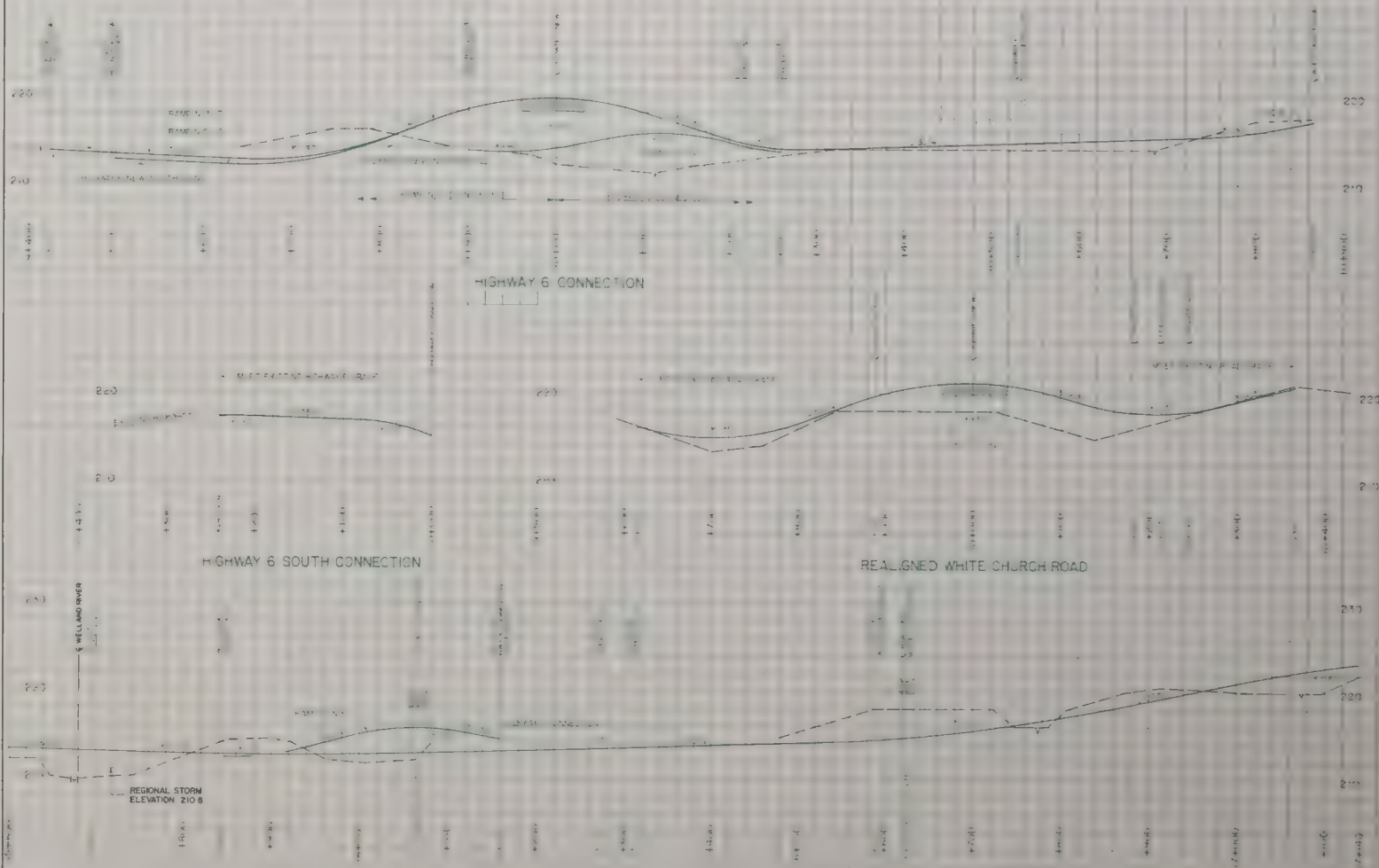
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| | |
|--|---------------|
| | PROPOSED ROW |
| | PROPERTY LINE |

Plan
 ULTIMATE STAGE
 STATION 15+600 TO 17+130
 W.P. 36 84-00

EXHIBIT NUMBER
A 10





Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

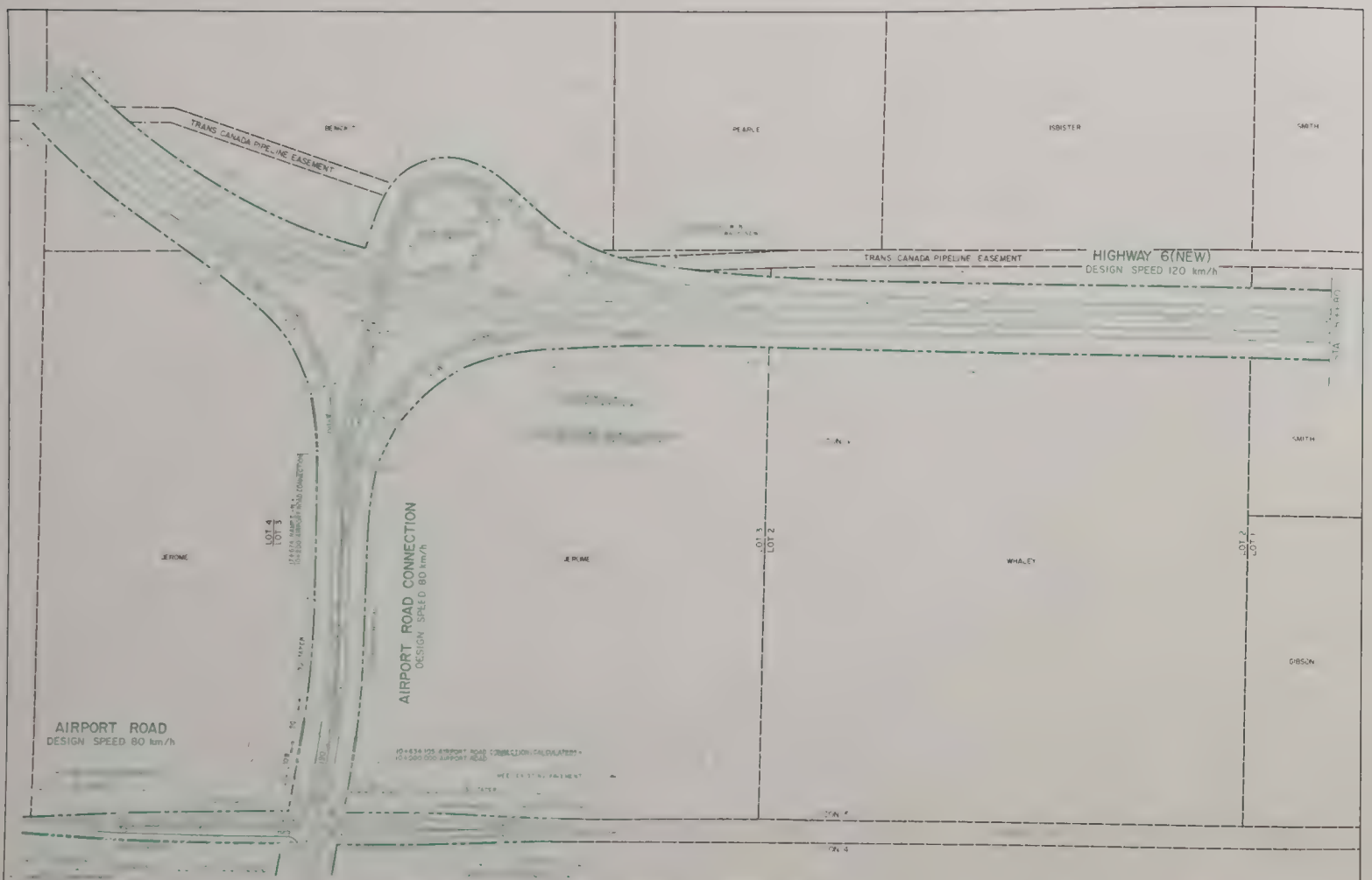
- ORIGINAL GROUND
- - - EXISTING GRADE
- PROPOSED GRADE


Profile

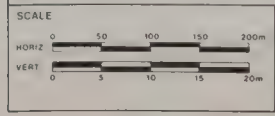
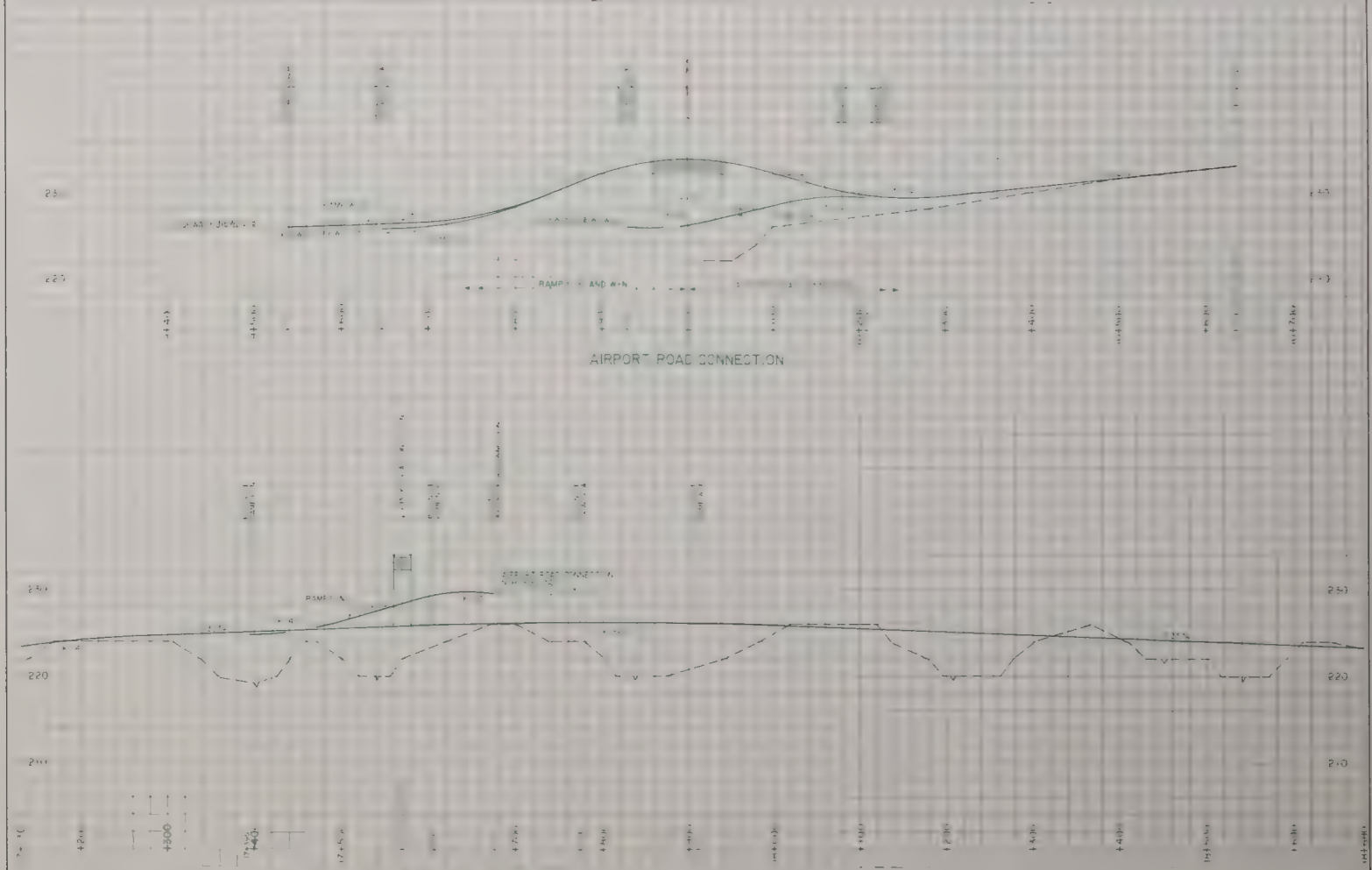
ULTIMATE STAGE
STATION 15+600 TO 17+140
W.P. 36-84-00

EXHIBIT NUMBER

A 11



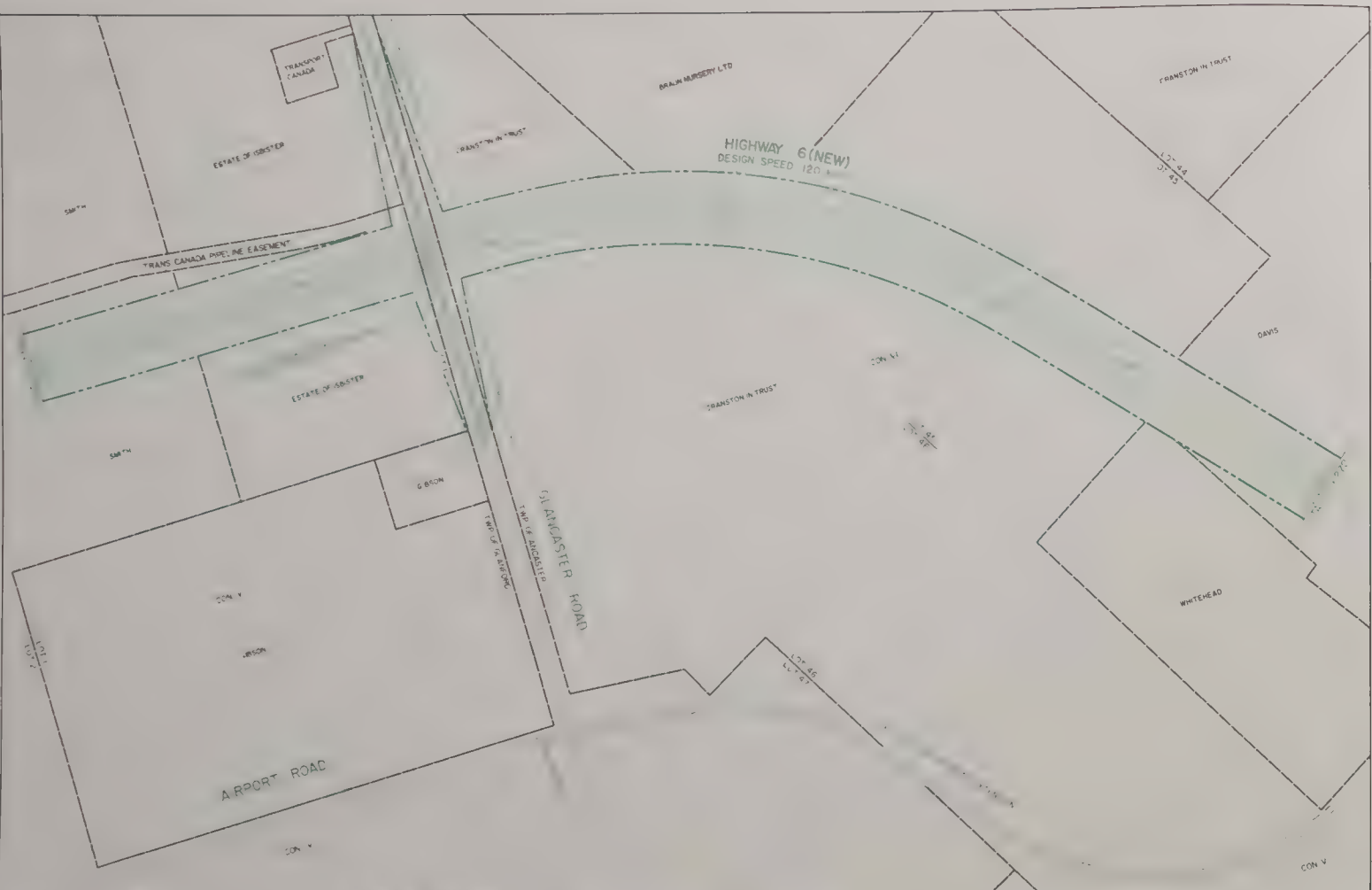
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|---|----------|--|--|---|--|



Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

Profile
 ULTIMATE STAGE
 STATION 17+130 TO 18+680
 W.P. 36 84-00

EXHIBIT NUMBER
A 13

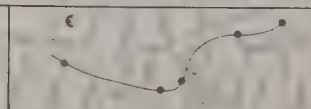
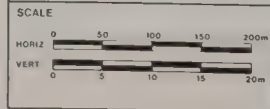
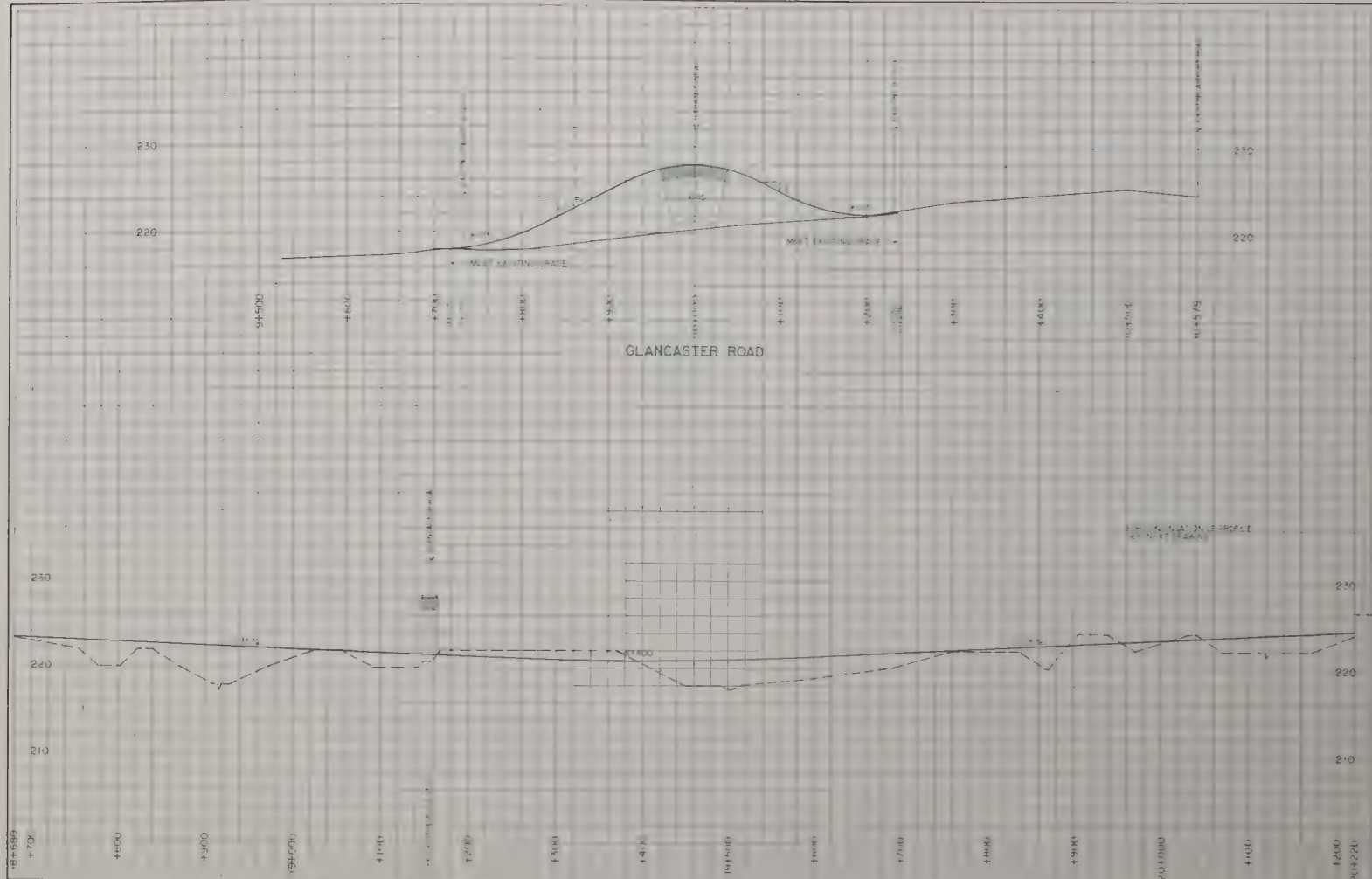


Highway 6 (New) HAMILTON TO CALEDONIA Environmental Assessment & Preliminary Design Report

- LEGEND
- PROPOSED ROW
 - PROPERTY LINE

Plan
 ULTIMATE STAGE
 STATION 18+680 TO 20+270
 W.P. 36-84-00

EXHIBIT NUMBER
A 14



Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

LEGEND

— ORIGINAL GROUND
 — EXISTING GRADE
 — PROPOSED GRADE

Profile

ULTIMATE STAGE
 STATION 18+680 TO 20+220
 W.P. 36 84 00

EXHIBIT NUMBER

A 15

LOT 43
LOT 44

WINE GARDEN

SMITH

CON V

Highway 6 (New)

DESIGN SPEED 80 km/h

STA 21+760

HILL

CROWN LAND

MORRIS B "BUS"

CON V

LOT 44
LOT 46

Butter Road
DESIGN SPEED 80 km/h

WINE GARDEN

CRANSTON TRUST

SCALE

HORIZ 0 50 100 150 200m



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

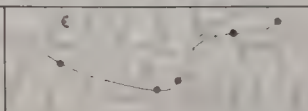
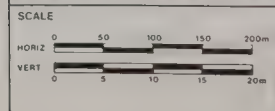
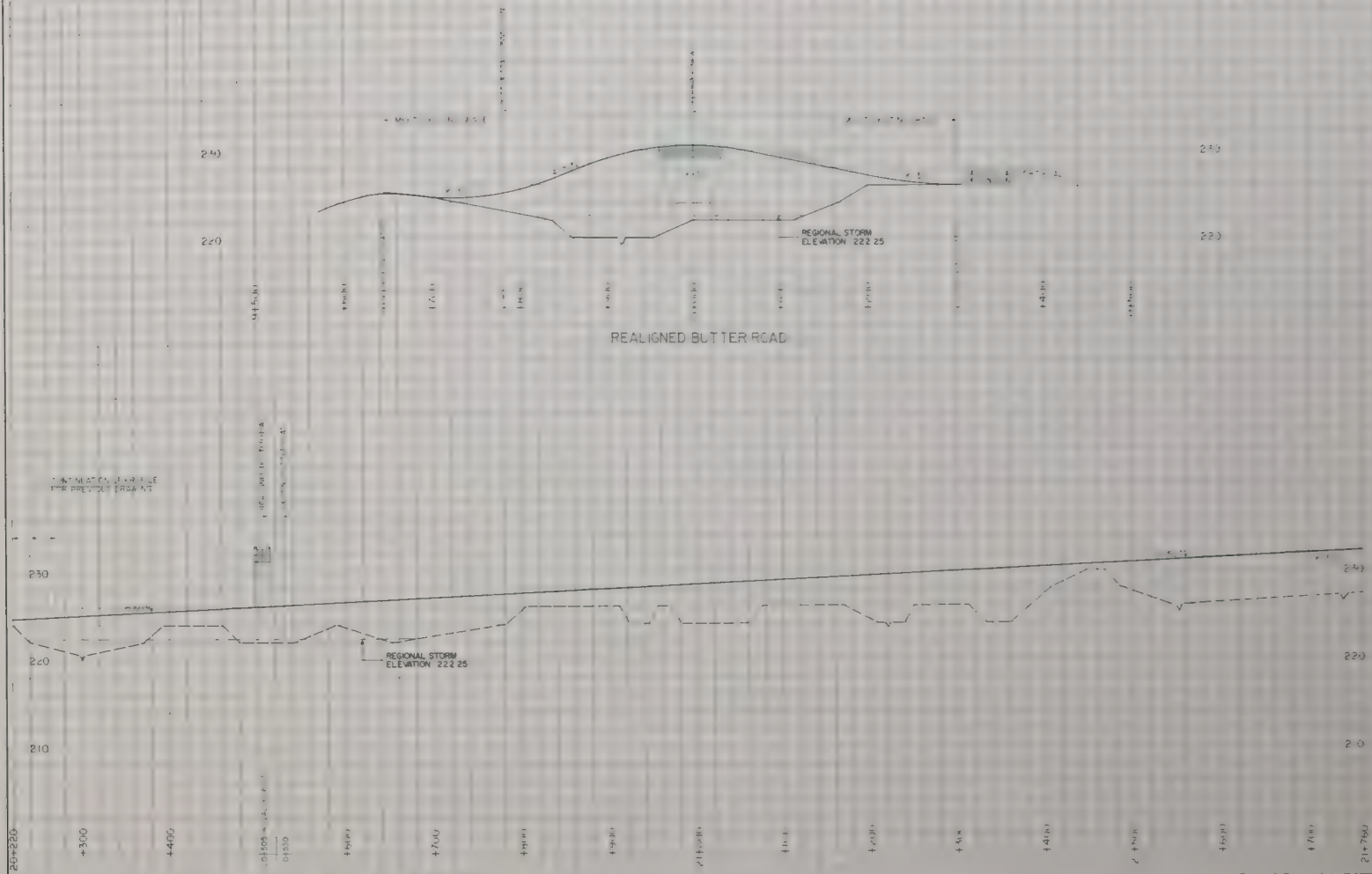
--- PROPOSED ROW
- - - PROPERTY LINE

Plan

ULTIMATE STAGE
STATION 20+270 TO 21+760
W.P 36-84-00

EXHIBIT NUMBER

A 16



Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

LEGEND
 — ORIGINAL GROUND
 - - - EXISTING GRADE
 — PROPOSED GRADE

Profile
 ULTIMATE STAGE
 STATION 20+220 TO 21+760
 W.P 36 84 00

EXHIBIT NUMBER
A 17

HIGHWAY 6 (NEW)
DESIGN SPEED 120 km/h

22+760 TO 23+300 NEW CULVERTS

LOT 44
LOT 45

LOT 44
LOT 45

JEROME
CON IV

CROWN LAND
CON V

LOT 45
LOT 46

WILLIAM & PATRICIA
PETRIE

PET CEMETERY

PARKIN
CEMETERY

JEROME

HIGHWAY 6 (NEW) DESIGNATION

LOT 45
LOT 46

C. APPERTON

BOOK ROAD
DESIGN SPEED 80 km/h

HIGHWAY 6 (NEW) DESIGNATION

JEROME

RYCKMAN

STA 21+300



Highway 6 (New)
HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

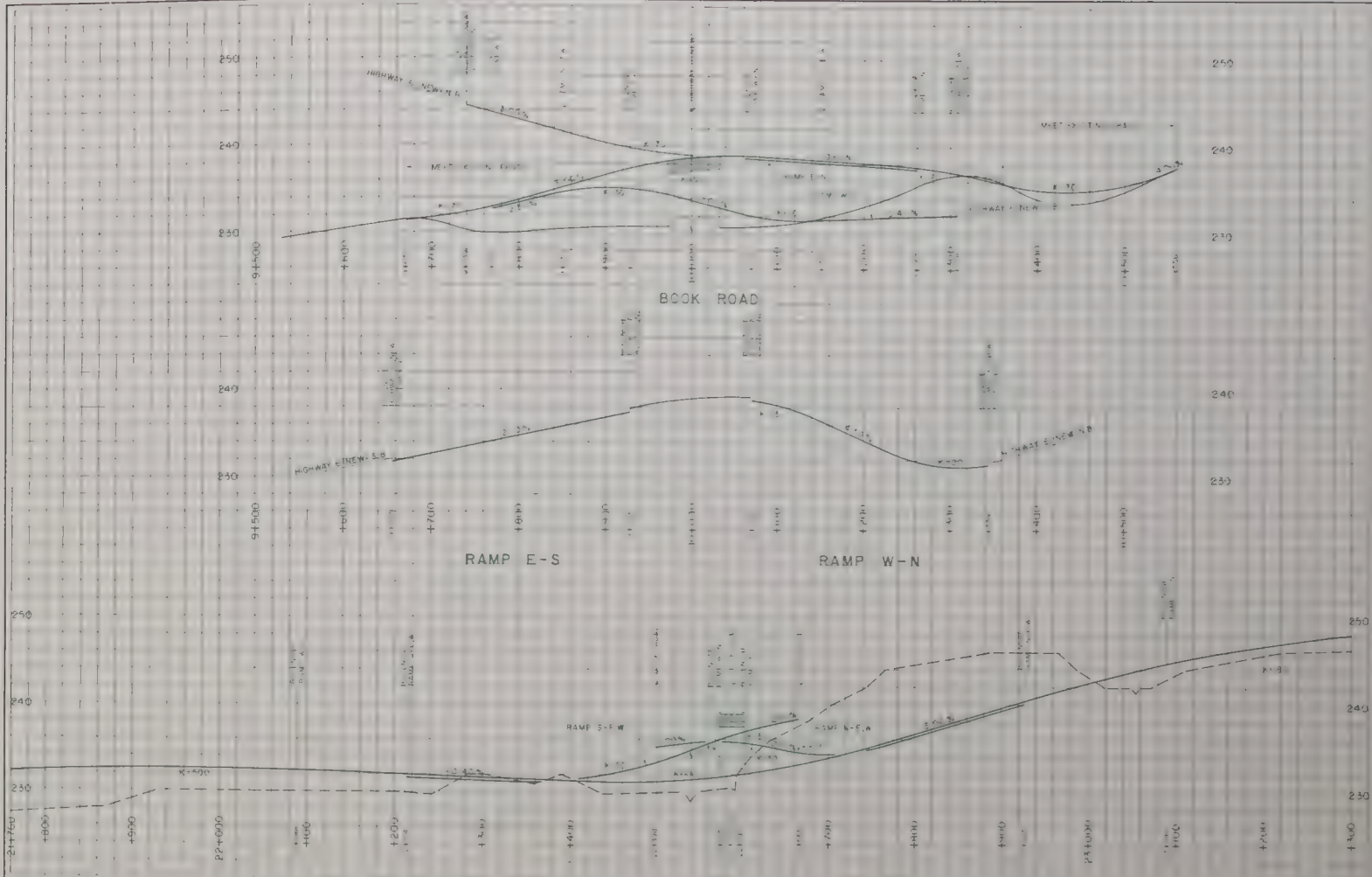
--- PROPOSED ROW

--- PROPERTY LINE

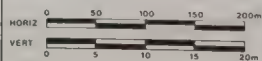
--- HIGHWAY 6 (NEW) DESIGNATION

Plan
ULTIMATE STAGE
STATION 21+760 TO 23+300
W.P. 36-84-00

EXHIBIT NUMBER
A 18



SCALE



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

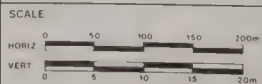
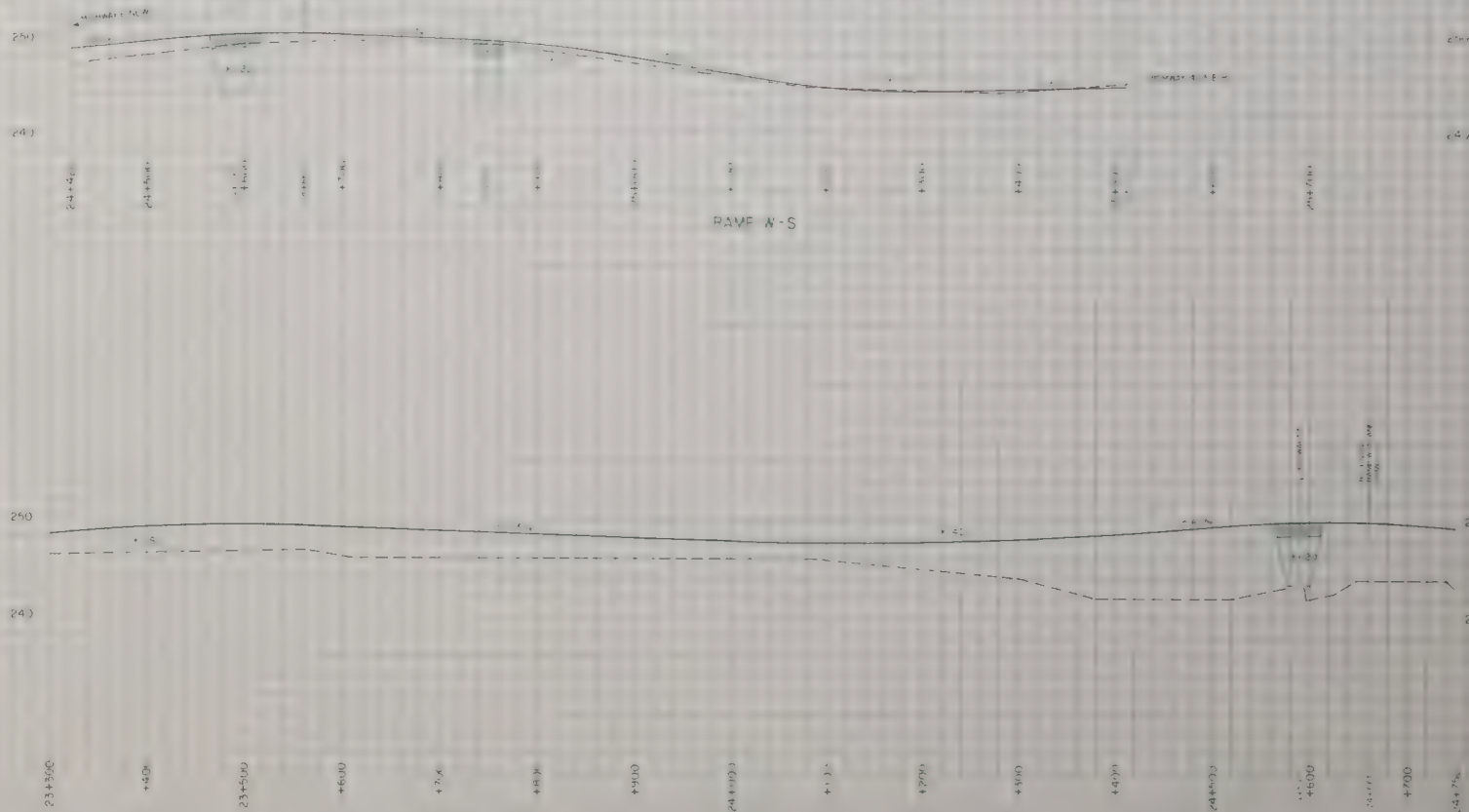
— ORIGINAL GROUND
- - - EXISTING GRADE
— PROPOSED GRADE

Profile

ULTIMATE STAGE
STATION 21+760 TO 23+300
W.P. 36 84 00

EXHIBIT NUMBER

A 19



Highway 6 (New)

HAMILTON TO CALEDONIA

Environmental Assessment & Preliminary Design Report

LEGEND

ORIGINAL GROUND

EXISTING GRADE

PROPOSED GRADE

Profile

ULTIMATE STAGE
STATION 23+300 TO 24+750
WP 36-84-00

EXHIBIT NUMBER

A 21




HIGHWAY 403
DESIGN SPEED 120 km/h

OUTSIDE LANE ENDS AT STANDARD 900m SCL
INSIDE LANE ENDS APPROXIMATELY 15m WEST OF SOUTHC. IR. ROAD STRUCTURE

SCALE

0 50 100 150 200m

HORIZ



Highway 6 (New)

HAMILTON TO CALEDONIA

LEGEND

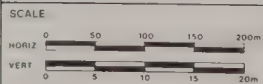
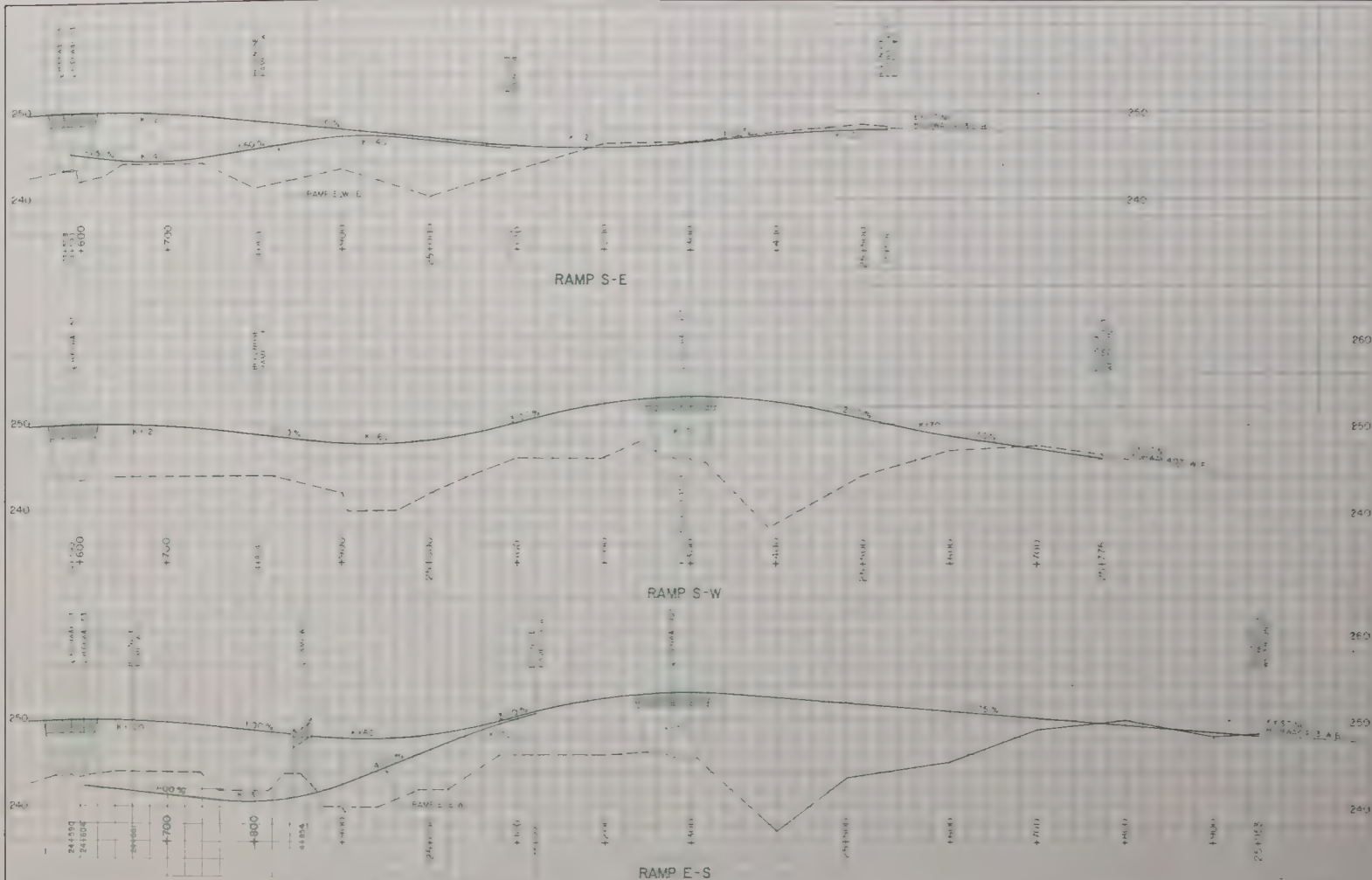
-  PROPOSED R.O.W.
 PROPERTY LINE
 HIGHWAY 6 (NEW)
 DESIGNATION

Plan

ULTIMATE STAGE
STATION 24+750 TO 25+290.376
W.P. 36 84-00

EXHIBIT NUMBER

A 22



Highway 6 (New)

HAMILTON TO CALEDONIA
Environmental Assessment & Preliminary Design Report

LEGEND

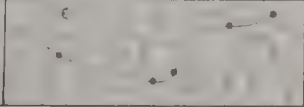
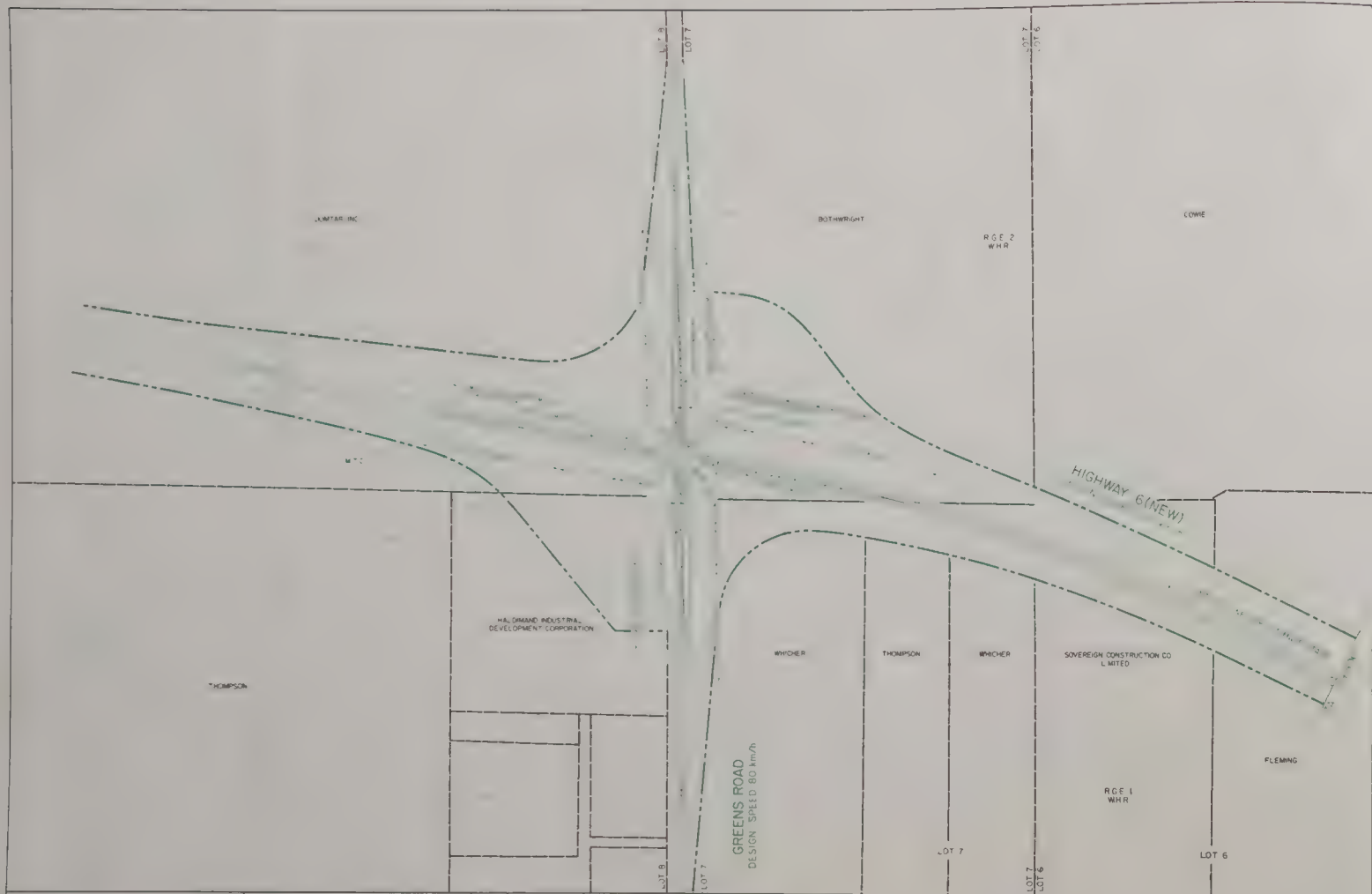
ORIGINAL GROUND
EXISTING GRADE
PROPOSED GRADE

Profile

ULTIMATE STAGE
STATION 24+540 TO 25+953
W.P. 36-84-00

EXHIBIT NUMBER

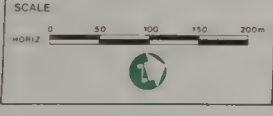
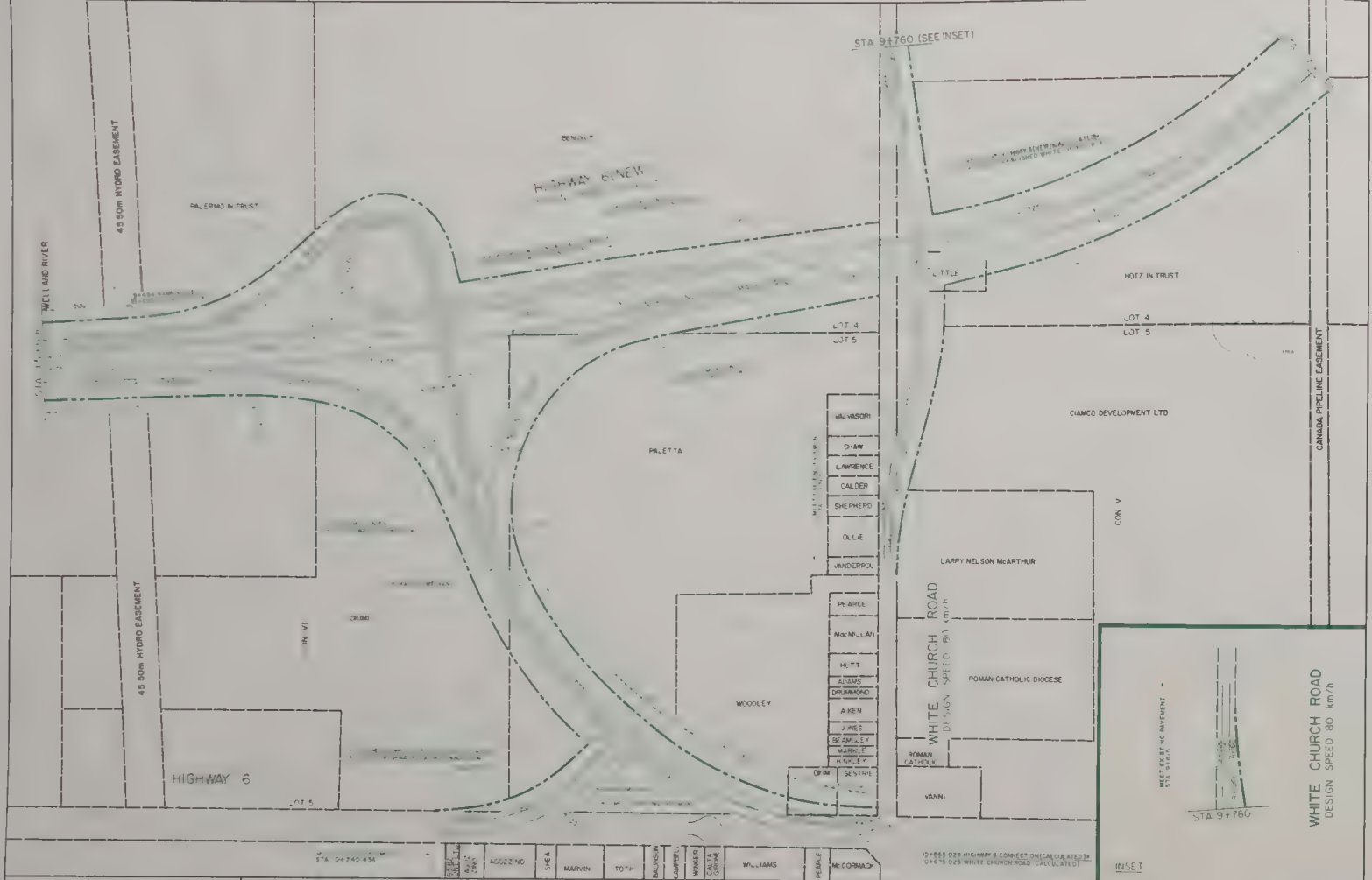
A 23



Highway 6 (New)
 HAMILTON TO CALEDONIA
 Environmental Assessment & Preliminary Design Report

Plan
 INITIAL STAGE
 STATION 9+720 TO 10+800
 W.P. 36 84-00

EXHIBIT NUMBER
A 24



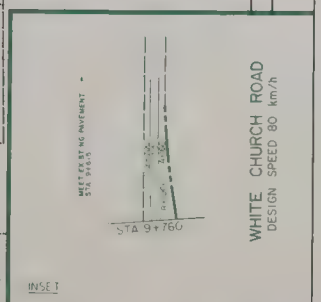
Highway 6 (New) HAMILTON TO CALEDONIA Environmental Assessment & Preliminary Design Report

LEGEND

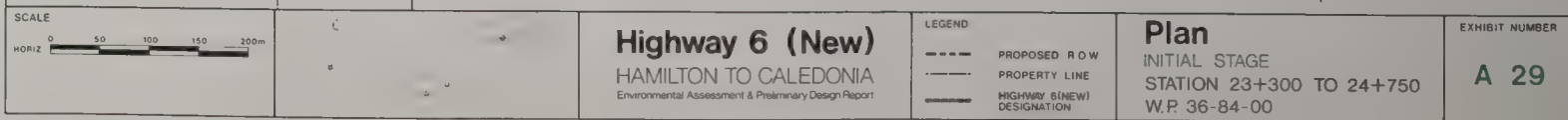
- PROPOSED R.O.W
- PROPERTY LINE

Plan
 INITIAL STAGE
 STATION 15+600 TO 17+130
 W.P. 36-84-00

EXHIBIT NUMBER
A 26



10+850 025 HIGHWAY 6 CONNECTION CALCULATED IN
 10+75 025 WHITE CHURCH ROAD CALCULATED





| | | | | |
|--|---|--|---|-----------------------------------|
| <p>SCALE</p> <p>0 50 100 150 200m</p> <p>HOR Z</p> | <p>Highway 6 (New)</p> <p>HAMILTON TO CALEDONIA</p> <p>Environmental Assessment & Preliminary Design Report</p> | <p>LEGEND</p> <p>--- PROPOSED R.O.W.</p> <p>— PROPERTY LINE</p> <p>..... HIGHWAY 6 (NEW) DESIGNATION</p> | <p>Plan</p> <p>INITIAL STAGE</p> <p>STATION 24+750 TO 25+290.376</p> <p>W.P. 36 84-00</p> | <p>EXHIBIT NUMBER</p> <p>A 30</p> |
|--|---|--|---|-----------------------------------|

APPENDIX B

Soils

Engineering Soils Description for Hamilton to Caledonia Location Study

GENERAL DESCRIPTION

OUTWASH materials

Texture - medium sand and sand over gravel

Topography - flat to gently sloping plateau

Drainage - good but some impediment due to cemented layer below 1 m

Erosion - surface layer susceptible to water erosion

Agriculture - sandy soils are used for growing small grains, corn, fruit trees and potatoes. Some limitations due to draughtiness and erosion

Engineering features:

Well sorted medium course sand overlying cemented gravel or sand layer to the approximate depth of 1 m.

Possible source of granular material but difficult to excavate due to flat topography and strong cementation. Water table at variable depth. Watch for seepage in cuts.

LACUSTRINE materials

Texture - a) fine sand deposits over till
b) stratified silt and fine sand deposits over till material
c) silty clay deposits over till

Topography - flat to undulating

Drainage - good to poor depending on location

Erosion - surface erosion common

Agriculture - silty clay soils are good for variety of crops such as: grains, corn and forage. In some areas field tiles required. Fine sands and silts grow canning crops, strawberries, tomatoes and orchards. Drainage improvement is necessary in some areas.

Engineering Features:

Lacustrine deposits are poor source of earth borrow due to fine gradation and uniform grading. Difficult to compact and are frost susceptible.

Silt and fine sands are strongly stratified but usually form only shallow deposits over till. Deeper cuts or excavations will be in till. Silt proportion is probably over 60%. Watch for seepage in cuts.

Silty clay is predominant soil deposit in this area. Its accumulation is thick and cuts will probably be within this deposit. Silt content higher at the surface. Difficult to compact and susceptible to slope failure. Watch for settlements.

TILL materials

Texture - silt and clay in variable preparation. Lenses of clay and sand possible, few boulders and pebbles of shale and sandstone.

Topography - undulating but steep along eroded ravines

Drainage - surface drainage good but excessive in ravines

Erosion - erodible if not protected by the vegetation

Agriculture - the soil is good for agriculture, grows large variety of crops and is suitable for orchards. Steep ravines covered by forest.

Engineering Features:

Heterogeneous silt and clay, well compacted with few boulders. Fair earth borrow but frost susceptible with silt content over 50%. Good for foundations with high shearing strength. Watch for sudden changes in texture or moisture content.

memorandum

Regional Geotechnical Section, Central Region, 224-7407



P.B. Shaver

- 2 -

84 07 18

To: Mr. P.B. Shaver
Planning and Design
Central Region

Date: 1984 07 18



RE: W.O. 82-23035
Hwy 6, Hamilton to Caledonia Route Planning
District 4, Hamilton

As requested, I am forwarding preliminary soils information for the Highway 6 study area.

Most of the intensive and extensive study area is located within the Haldimand Clay Plain topographic region. These soils have a high clay content with poor internal drainage.

Two till moraine strips infringe on the study area. They are situated in the north end of the study area, as illustrated in diagram 1. These strips consist of loose, well drained clay loam.

The underlying rocks consist of a succession of Palaeozoic beds dipping towards Lake Erie. These contain dolestone from the Lockport and Guelph formations in the north. Further south near Caledonia dolestone, shale and gypsum from the Salina Formation are predominant.

A preliminary soils investigation was conducted in the study area between June 28 and July 4, 1984. A total of 17 holes were placed to a depth of 6m. For the location of these holes refer to the attached plan.

This investigation indicated topsoil depths up to 1m over brown silty clay and clayey silt materials. The Br.Si.Cl. are generally moist and have a medium plasticity.

Below this there are gray silty clays and gray silt. Most of this material has a high moisture content ranging from moist to wet.

No bedrock was encountered in any of the boreholes up to a depth of 6.0m.

Most of the moist upper silty clay material would be suitable for use as fill. The wet silts and silty clays that were encountered at greater depths might not be suitable as fill material. Further investigation is required to accurately determine the suitability of these materials for fill.

More detailed data will be provided as soon as the study area is narrowed and various route alternatives are selected.

If you have any questions regarding the above, please contact me.

A handwritten signature in cursive script, appearing to read "P. Verok".

P.G. Verok

PGV/RDG:jc
Attach

for: R.D. Gunter
Head, Geotechnical Section

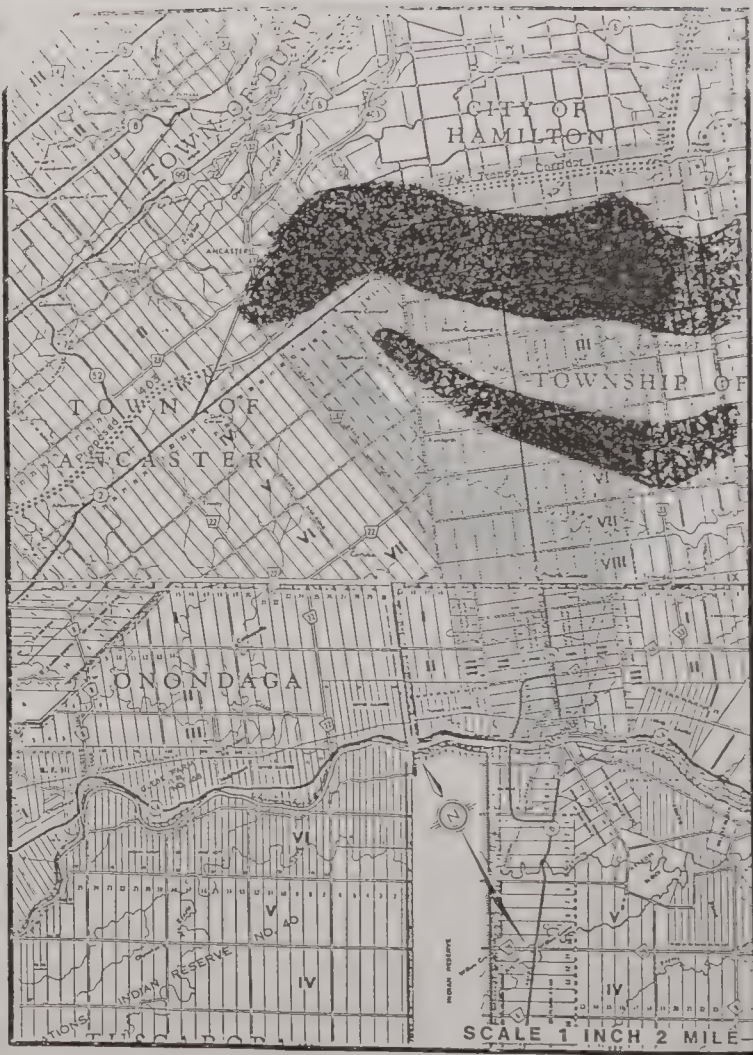
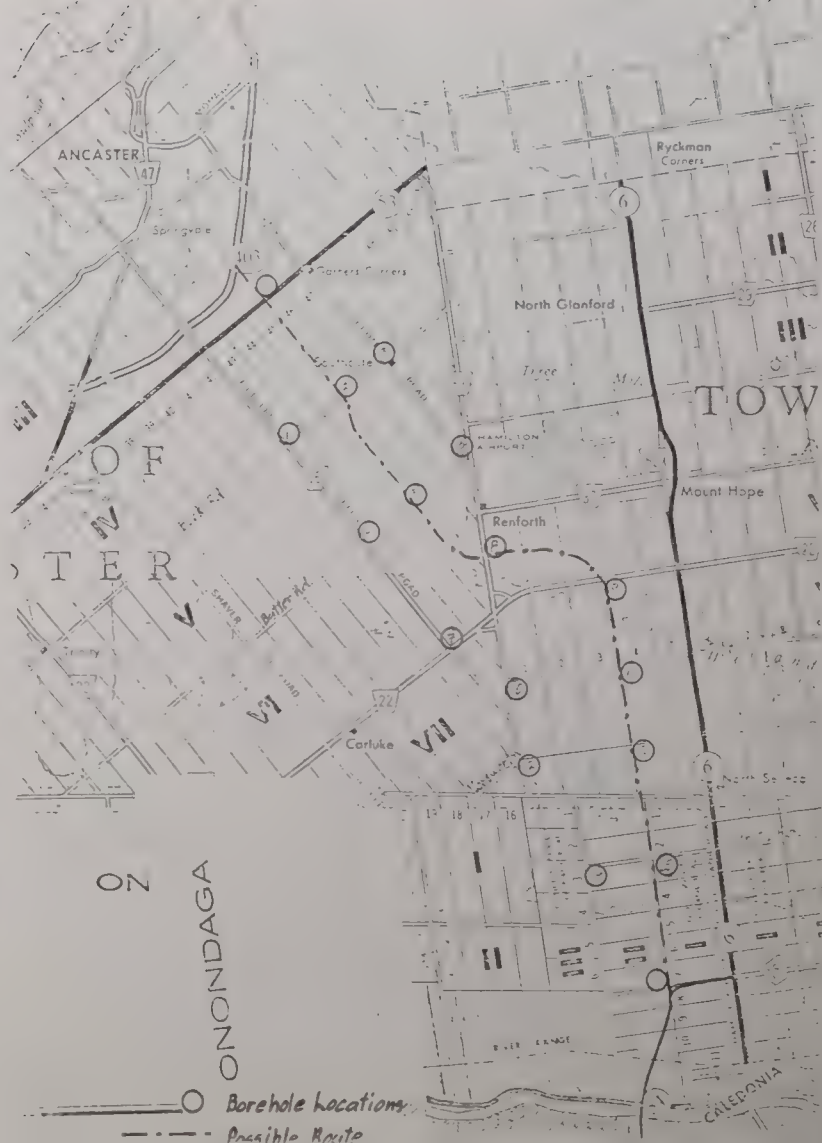


Diagram #1
EXTENSIVE STUDY AREA



○ Borehole locations
- - - Possible Route

Borehole #11 1.2m W. Hwy. 6 on Chippewa Rd.

| 0 | 60mm | surf treated |
|-----|------|----------------------|
| - | 240 | c.r.gr. |
| 60 | - | dk.br.si.cl.tps. |
| 240 | 430 | br.si.cl.(M/P) moist |
| 430 | 2.3m | br.si. moist |
| 2.2 | 5.7 | gy.si. moist |
| 5.7 | 6.0 | |

Borehole # 12 S.W. corner of Glancaster (Reg. Rd. 53) and Narsworthy

| | | |
|-----|-------|---------------------|
| 0 | 270mm | cr,gr |
| 270 | 640 | dk.br.si.cl.tps. |
| 640 | 1.5m | br.si.cl. MP |
| 1.6 | 4.0 | br.si. wet |
| 4.0 | 5.1 | br.si.cl.(MP) moist |
| 5.1 | 6.0 | gr.si.cl.(MP) moist |

Borehole #13 1.2km W. Hwy. 6 on Leeming Rd.

| | | |
|-----|-------|--------------------------|
| 0 | 500mm | dk.br.si.cl.tps. |
| 500 | 3.5m | br.si.cl. M.P. dry-moist |
| 3.5 | 6.0 | gry.si.cl. moist |

Borehole #14 60.0m E. Mines Rd. on Unity Rd.

| | 20mm | surf treated |
|-----|------|-------------------------------|
| 0 | 270 | er-gr ^a |
| 20 | 550 | br ^a .so. (SP) |
| 270 | 1.2m | dk-br.si.cl. ^b ts. |
| 550 | 2.5 | br.si.cl. (MP) molt |
| 1.2 | 3.0 | br.cl.si. wet ^c |
| 2.5 | 4.6 | br.si.cl. (HP) molt 3.5-4.0 |
| 3.0 | | br.si.cl. (HP) molt 3.5-4.0 |
| 4.6 | | br.si.cl. (HP) molt wet |
| 6.0 | | |

orehole #6 25.0m N. Butler Rd. on Southcot Rd.

| | | |
|-----|-------|---------------|
| 0 | 700mm | br.si. moist |
| 700 | 1.2m | br.cl.si. wet |
| 1.2 | 4.7 | br.si.moist |
| 4.7 | 6.0 | gr.si. moist |

Borehole #7 30.0m S. Carluka Rd. on Fiddler's Green

| | | | |
|-----|---|------|--------------------|
| 0 | - | 80mm | cr.gr. |
| 80 | - | 300 | dk.br.sl.cl.tps. |
| 300 | - | 1.2m | br.sl.cl. MP moist |
| 1.2 | - | 4.0 | br.sl. moist |
| 4.0 | - | 5.0 | gry.sl.cl. moist |
| 5.0 | - | 6.0 | gry.sl. wet |

Borehole #8 0.6km S. Reg. Rd. 37 on Reg. Rd. 53

| | | | |
|-----|---|-------|--|
| 0 | - | 110mm | capr. |
| 110 | - | 320 | cr. gr. |
| 370 | - | 640 | br. sl. |
| 640 | - | 740 | dk. br. cl. sl. tps. |
| 740 | - | 1,2m | br. cl. sl. |
| 1.2 | - | 3.5 | gr. sl. wet 1.7-2.2 84-VB-17 |
| 1.5 | - | 6.0 | gr. sl. cl. (MP) molt-wet 4.2-4.8 84-VB-18 |

Borehole #9 1.2km W. Hwy. 6 on Reg. Rd. 22

| | | |
|-----|-------|---------------------------|
| 0 | 230mm | cr.gr., wet |
| 230 | 600 | dk.br.sl.cl. and lps. mix |
| 600 | 3.2m | br.sl.cl. (MP) moist |
| 3.2 | 5.5 | br.sl. moist |
| 5.5 | 6.0 | gry.br.sl. moist |

Borehole #10 35.0m E. Reig. Rd. 53 on Chippewa Rd.

| 0 | 20mm | surf treated |
|-----|------|---|
| 20 | 200 | GF ^a , GR ^a |
| 200 | 400 | df ^a , br ^a , cl ^a , sl ^a |
| 400 | 900 | br ^a , cl ^a , MP moist |
| 900 | 2.0m | br ^a , cl ^a , sl ^a , wet |
| 2.0 | 4.0 | br ^a , sl ^a , wet |
| 4.0 | 6.0 | gr ^a , sl ^a , cl ^a , (HF) moist |

Proposed New Highway 6

| | |
|--------------|--|
| Borehole #17 | 1.2 km E. Fiddler's Green Rd. on Hwy. 52 |
| 0 | 500mm |
| 500 | cr. br. si. sa. tps. and gr. mix |
| 900 | br. si. sa. wet |
| 950 | 3.5m |
| 9900 | br. si. cl. MP moist |
| 3.3.5 | 3.9 |
| 3.3.5 | 4.5 |
| 3.3.9 | br. sa. (SP) wet |
| 4.5 | 6.0 |
| 4.5 | br. si. sa. wet |

Borehole #17 1.2km E. Fiddler's Green Rd. on Hwy. 53

| 0 | 80mm | asph. |
|-----|------|-----------------------|
| 80 | 280 | cr-gr. |
| 280 | 1.8m | br-sf. cl. (MP) moist |
| 1.8 | 2.2 | br-sf. wet |
| 2.2 | 3.5 | br-sf. cl. (MP) moist |
| 3.5 | 4.0 | br-cl. sf. wet |
| 4.0 | 5.0 | br-cl. moist |
| 5.0 | 6.0 | gr-sf. cl. (HP) moist |

Borehole #16 Corner of New Hwy. 6 and Greens Rd.

| Borehole #1 | 1.0km W. Hwy. 6 on Unity Rd. |
|-------------|------------------------------|
| 0 | 20mm surf treated |
| 20 | cr-gr ¹ |
| 200 | br.sa, SP |
| 350 | 1.4m dk.br.sl.cl, trs. |
| 350 | br.sl.cl, (MP) moist |
| 1.4 | 2.8 br.cl.sl, wet |
| 2.8 | 3.3 br.sl.cl, (HP) moist |
| 3.3 | 5.2 gry.sl.cl, (HP) moist |
| 5.2 | 6.0 |

Borehole #1 - 1.0km W. Hwy. 6 on Unity Rd.

| Borehole # | 5 | 1.0 km E. Fiddler's Green Rd., on Butter Rd. |
|------------|---|--|
| 0 | - | 100mm |
| 100 | - | 1.3m |
| 1.3 | - | br.cl.sl. wet |
| 1.3 | - | br.sl.cl. MP moist |
| 2.6 | - | 3.1 |
| 3.1 | - | gr.cl.sl. wet |
| 3.1 | - | 5.0 |
| 3.1 | - | 5.0 |

5.2 - gry.s.i.c.l. (wet) MP (sl. seepage at 4.5)

| Borehole #4 | 30.0m E. Fiddler's Green Rd., on Butter Rd. |
|-------------|---|
| 0 | - |
| 75 | - |
| 600 | - |
| 1.0 | - |
| 1.6 | - |

Borehole #4 30.0m E, Fiddler's Green Rd, on Butter Rd.

| Borehole #3 | 25.0m E. Southcote Rd., on Book Rd. |
|-------------|-------------------------------------|
| 0 | - 250mm cr.gr. |
| 250 | - 550 dk.br.sl.sa.tps. |
| 550 | - 4.0m br.sl.cl. M.P. moist |
| 4.0 | - 6.0 gry.sl.cl. M.P. moist |

Borehole #3 25.0m E. Southcote Rd. on Book Rd.

| | | | | |
|-----|---|------|-------------------|-----------|
| 0 | - | 1.7m | br.sl. (B4-WB-15) | H. M. wet |
| 1.7 | - | 3.6 | gr.sl. (B4-WB-16) | H. M. wet |
| 3.6 | - | 3.7 | br.sl.sa. | wet |
| 3.8 | - | 4.7 | gr.sl. | wet |
| 4.7 | - | 6.0 | gr.sl. | moist |

Borehole #2 1.2km E. Fiddler's Green Rd.

| | | | |
|-----|---|-------|----------------------------|
| 0 | - | 100mm | cr.gr. |
| 100 | - | 700 | br.cl.sl. moist |
| 700 | - | 2.7m | br.sl. moist |
| 2.7 | - | 4.0 | gy.sl. moist |
| 4.0 | - | 4.4 | gy.cl.sl. moist |
| 4.4 | - | 6.0 | gy.sl. moist (wet 5.0-6.0) |

Borehole #1 50m E. Fiddler's Green Rd. on Book Rd.

Preliminary Foundation Report
For
Highway 6 New: Preliminary Study
Hwy. 403 to Caledonia By-Pass
W.P. 36-84-00 Site 36
District 4, Burlington

Introduction

This preliminary report is a summary of the foundation investigation results obtained at the proposed structure locations along Highway 6 New.

The proposed alignment extends approximately 25 km from Highway 403 south to the existing Caledonia By-Pass. There are sixteen structure locations along the stretch of new highway. These consist of twelve road crossings, two creek crossings and two interchanges as shown in Figure 1. For this investigation the sites of the proposed structure locations are numbered, increasing consecutively from south to north. Although sixteen investigations were planned, only thirteen were conducted. Foundation investigations at site numbers 12, 13 and 15 will be carried out at a later date.

The fieldwork was conducted during the period from 86 07 30 to 86 09 19. The work consisted of 25 sampled boreholes with dynamic cone penetration tests. Two boreholes were advanced at each site at the proposed abutment locations with rock coring performed in one of the two boreholes. Only one borehole with rock coring was advanced at Site #3.

General Description

The sites are located in the geographic townships of Ancaster and Haldimand, Wentworth Region. The proposed highway will extend from the existing Caledonia By-Pass and run parallel to and approximately 500 m west of the existing Highway 6. An interchange for the Hamilton Airport is proposed between Whitechurch and Airport Roads, at which point the highway will veer west, crossing Glanaster Road, then bend northward again running parallel to and between Fiddlers Green and Southcote Roads to Highway 403.

Two distinct depositional environments were found to exist in the area covered by the proposed roadway. A deltaic deposit known as the Norfolk Sand Plain exists toward the north end and was encountered at Sites 14 and 16. The remaining sites, 1 through 11, fall within the Haldimand Clay Plain characterizing a glacio-lacustrine environment.

The general topography of the area is of relatively low relief. Land use is primarily agricultural and sparsely residential.

Preliminary foundation recommendations are presented for each site and Record of Borehole sheets are attached. It should be noted that the recommendations are of a preliminary nature and that further foundation investigations will be required when design details are finalized.

General Recommendations

The following recommendations are standard and pertain to all sites.

Footings

For frost protection, a minimum cover of 1.2 m is recommended. Structures for which the abutments are to be perched on compacted Granular 'A' fill, should be constructed in accordance with the scheme presented in Figure 2. The following design values are recommended:

Factored Bearing Capacity at U.L.S. = 900 kPa

Bearing Capacity at S.L.S. Type II = 350 kPa

For design purposes, an unfactored friction coefficient of 0.55 may be assumed to apply between the footing and the granular pad.

Approaches

No stability problems are anticipated for the fill heights proposed given that slopes of 2:1 are maintained.

Earth Pressure

Backfill to structures should consist of granular material in accordance with MTC Standard Special Provision #121 (83 10). Computation of earth pressures should be in accordance with Section 6.6.1.2 of the O.H.B.D.C.

For design purposes, the physical properties of the backfill are as follows:

| Material | ϕ | γ |
|--------------|--------|------------------------|
| Granular 'A' | 35° | 22.0 kN/m ³ |
| Granular 'B' | 30° | 21.2 kN/m ³ |

Pile Foundations

Where end bearing piles founded on bedrock are recommended the following design loads are to be used:

| | HP 310 x 110 | HP 310 x 79 |
|-------------------------------------|--------------|--------------|
| Factored Bearing Capacity at U.L.S. | 1600 kN/pile | 1150 kN/pile |
| Capacity at S.L.S. Type II | 1150 kN/pile | 825 kN/pile |

Dewatering

Where excavation for footings and pile caps is required below the groundwater level, dewatering problems are not anticipated.

Recommendations

Site #1 - Green Road

- Alternative 1: Abutments perched within the approaches on compacted Granular 'A' fill with design loads and sliding resistance coefficient as recommended.
- Alternative 2: End bearing piles driven to bedrock. Either HP 310 x 110 or HP 310 x 79 may be used with design loads as specified.
Pile Tip Elevation: 186.7 m
- Alternative 3: Spread footings on original ground. Recommended design values are as follows:
Factored Bearing Capacity at U.L.S. 280 kPa
Bearing Capacity at S.L.S. Type II 190 kPa
- The lateral sliding resistance between the footing and the cohesive foundation material may be assumed to be 60 kPa. The footings should be founded at or below El. 207.0.

.....4

Site #2 - Creek Crossing

- Alternative 1: Abutments perched within the approaches on compacted Granular 'A' fill with design loads and sliding resistance as recommended.
- Alternative 2: Spread footings founded on original ground constructed with the following design parameters:
Factored Bearing Capacity at U.L.S. 420 kPa
Bearing Capacity at S.L.S. Type II 280 kPa
- At the South Abutment, the footing should be placed at or below El. 198.0. The North Abutment footing elevation is recommended at or below 201.0.
- The sliding resistance between the footing and the ground surface may be assumed to be 95 kPa.

- Alternative 3: A rigid frame open culvert may be used at this location. The footings should be placed 1.2 m below the creek invert to protect against frost susceptibility. The recommended footing elevation should be at or below 198.0. The bearing capacities may be considered the same as those specified in Alternative 2.

- Alternative 4: End bearing piles driven to bedrock. Either HP 310 x 110 or HP 310 x 79 may be used with the design loads as recommended.
Pile Tip Elevation: 190.2 m

Site #3 - Unity Road

The recommended foundations at this site are spread footings founded on original ground. The design values are given as follows:
Factored Bearing Capacity at U.L.S. 600 kPa
Bearing Capacity at S.L.S. Type II 400 kPa

Recommended depth of the footings is 1.2 m below original ground surface, at or below El. 216.7. The sliding resistance between the footing and the ground surface may be assumed to be 115 kPa.

A 9 m cut is proposed at this location. The cut should be maintained at a 2:1 slope.

Site #4 - Townline Road

- Alternative 1: Abutments perched within the approaches on compacted Granular 'A' fill with design loads and sliding resistance as recommended.

.....5

Alternative 2: Spread footings founded on original ground. The following design values are recommended for footings constructed at or below El. 212.5:

Factored Bearing Capacity at U.L.S. 285 kPa

Bearing Capacity at S.L.S. Type II 190 kPa

The sliding resistance between the footing and the ground surface may be assumed to be 35 kPa.

Alternative 3: End bearing piles founded on bedrock. Either HP 310 x 110 or HP 310 x 79 may be used in accordance with the design values provided.

Pile Tip Elevation: 192.5 m

Site #5 - Leeming Road

Alternative 1: Abutments perched within the approaches on compacted Granular 'A' fill with the design values prescribed.

Alternative 2: Spread footings founded on original ground. The following design values are recommended:

Factored Bearing Capacity at U.L.S. 420 kPa

Bearing Capacity at S.L.S. Type II 280 kPa

Footing Elevation - East Abutment 216.5

Footing Elevation - West Abutment 215.0

The value for sliding resistance between the footing and the ground may be assumed to be 40 kPa.

Alternative 3: End bearing piles founded on bedrock. Either pile size HP 310 x 110 or HP 310 x 79 may be used observing the design values provided.

Pile Tip Elevation: 191.8 m

Site #6 - Chippawa Road

Alternative 1: Abutments perched within the approaches and founded on compacted Granular 'A' fill, the design values for which have been provided.

Alternative 2: Spread footings founded on original ground. The design values are given as follows:

Factored Bearing Capacity at U.L.S. 420 kPa

Bearing Capacity at S.L.S. Type II 280 kPa

Footing Elevation 212.5

A value of 35 kPa may be assumed as the sliding resistance.

Alternative 3: End bearing piles founded on bedrock. Either HP 310 x 110 or HP 310 x 79 may be used, observing the design values recommended.

Pile tip elevation: 192.8 m

Site #7 - Creek Crossing

A piled foundation is the recommended alternative at this location given the nature of the subsurface material. Either HP 310 x 110 or HP 310 x 79 may be used, the design values for which have been provided.

Pile Tip Elevation: 185.7 m

Site #8 - Highway 6 Interchange

Alternative 1: Perched abutments founded on compacted Granular 'A' fill, observing the design values recommended.

Alternative 2: Spread footings founded on original ground. The following parameters are recommended for the footing design:

Factored Bearing Capacity at U.L.S. 280 kPa

Bearing Capacity at S.L.S. Type II 190 kPa

Footing Elevation - East Abutment at or below 211.0

Footing Elevation - West Abutment at or below 212.0

Sliding resistance between the footing and original ground may be assumed to be 35 kPa.

Alternative 3: End bearing piles founded on bedrock. Pile sizes HP 310 x 110 or HP 310 x 79 may be used given the recommended design loads.

Pile Tip Elevation: 193.1 m

Site #9 - Whitechurch Road

Alternative 1: Perched abutments on compacted Granular 'A' fill using the design values previously prescribed.

Alternative 2: Spread footings founded on original ground. Footings should be constructed with the following design parameters:

Factored Bearing Capacity at U.L.S. 280 kPa
 Bearing Capacity at S.L.S. Type II 190 kPa
 Footing Elevation - East Abutment at or below 214.8
 Footing Elevation - West Abutment at or below 216.0

A sliding resistance of 28 kPa may be assumed.

Alternative 3: End bearing piles driven to bedrock. Either HP 310 x 110 or HP 310 x 79 may be used with design loads as specified.

Pile Tip Elevation: 192.9 m

A cut is proposed at this location. No stability problems are expected given that slopes are maintained at 2:1.

Site 10 - Airport Interchange

Alternative 1: Perched abutments on compacted Granular 'A' fill using the design values recommended.

Alternative 2: Spread footings founded on original ground. Recommended design parameters are as follows:

Factored Bearing Capacity at U.L.S. 280 kPa
 Bearing Capacity at S.L.S. Type II 190 kPa
 Footing Elevation - North Abutment 219.8
 Footing Elevation - South Abutment 219.0

A coefficient of friction against sliding of 0.35 may be assumed.

Alternative 3: End bearing piles founded on bedrock. Either HP 310 x 110 or HP 310 x 79 may be used given the prescribed design loads.

Pile Tip Elevation: 198.1 m

Site #11 - Glancaster Road

A 2.0 m layer of soft organic material was encountered in the boreholes advanced at this location. Removal of this material is recommended for each alternative.

Alternative 1: Abutments perched within the approaches on compacted Granular 'A' fill, design values for which have been provided.

Alternative 2: Spread footings founded on original ground. Footings should be constructed with the following design parameters:

Factored Bearing Capacity at U.L.S. 280 kPa
 Bearing Capacity at S.L.S. Type II 190 kPa
 Footing Elevation - North Abutment 216.2
 Footing Elevation - South Abutment 216.5

Alternative 3: End bearing piles driven to bedrock. Either HP 310 x 110 or HP 310 x 79 may be used with the prescribed design loads.

Pile Tip Elevation: 194.7 m

Site #14 - Highway 53

Alternative 1: Perched abutments on compacted Granular 'A' fill using the recommended design loads.

Alternative 2: Spread footings founded on original ground. The following are recommended design values:

Factored Bearing Capacity at U.L.S. 420 kPa
 Bearing Capacity at S.L.S. Type II 280 kPa
 Footing Elevation - East Side at or below 242.0
 Footing Elevation - West Side at or below 239.6

A coefficient of friction against sliding of 0.35 may be assumed.

Alternative 3: End bearing piles to bedrock. Either HP 310 x 110 or HP 310 x 79 may be used with the recommended design loads.

Pile Tip Elevation: 215.8 m

Alternative 1: Perched abutments on compacted Granular 'A' fill, design values for which have been provided.

Alternative 2: Spread footings on original ground.
Footings should be constructed with the
following parameters:

| | |
|-------------------------------------|---------|
| Factored Bearing Capacity at U.L.S. | 420 kPa |
| Bearing Capacity at S.L.S. Type II | 280 kPa |
| Footing Elevation - East Abutment | 242.6 |
| Footing Elevation - West Abutment | 245.0 |

A final report, together with soil descriptions, will be forwarded upon completion of the remaining fieldwork.

R. Bennett

B. Bennett
Jr. Foundations Engineer

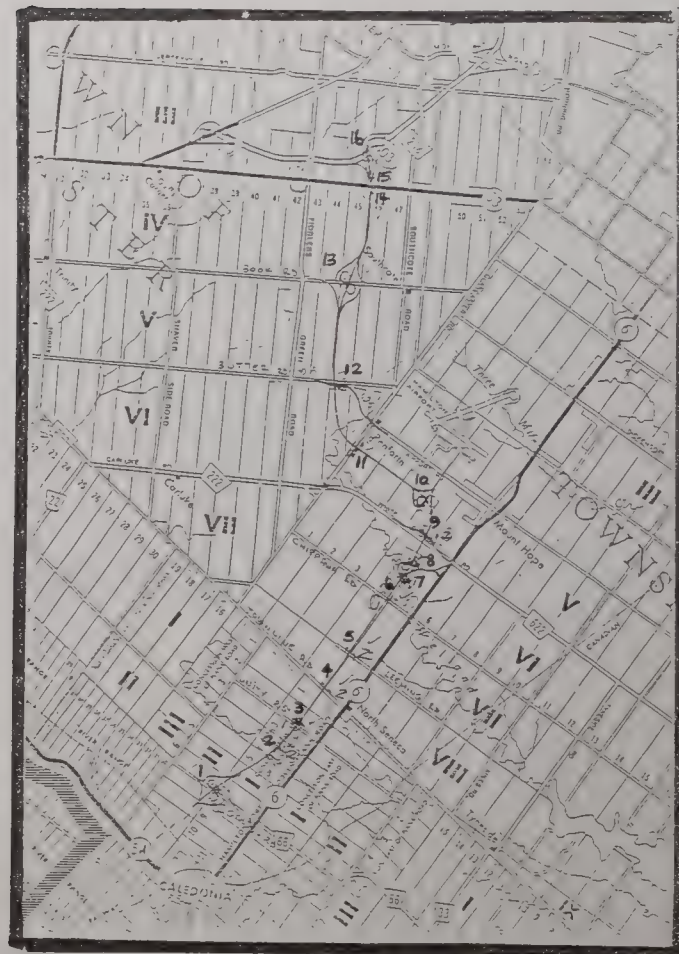
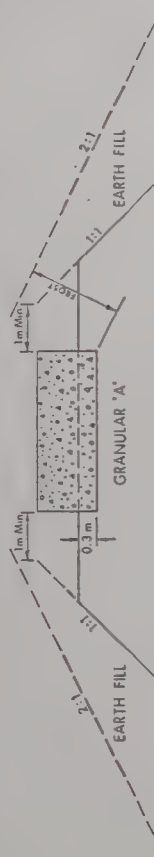
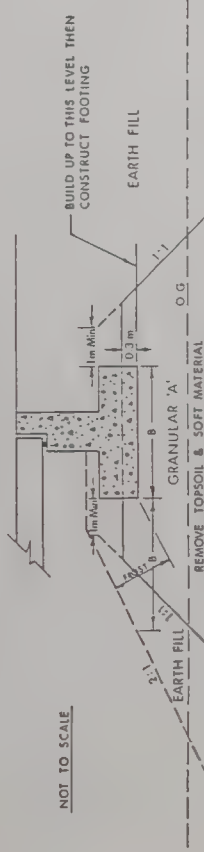


FIGURE 1



X SECTION

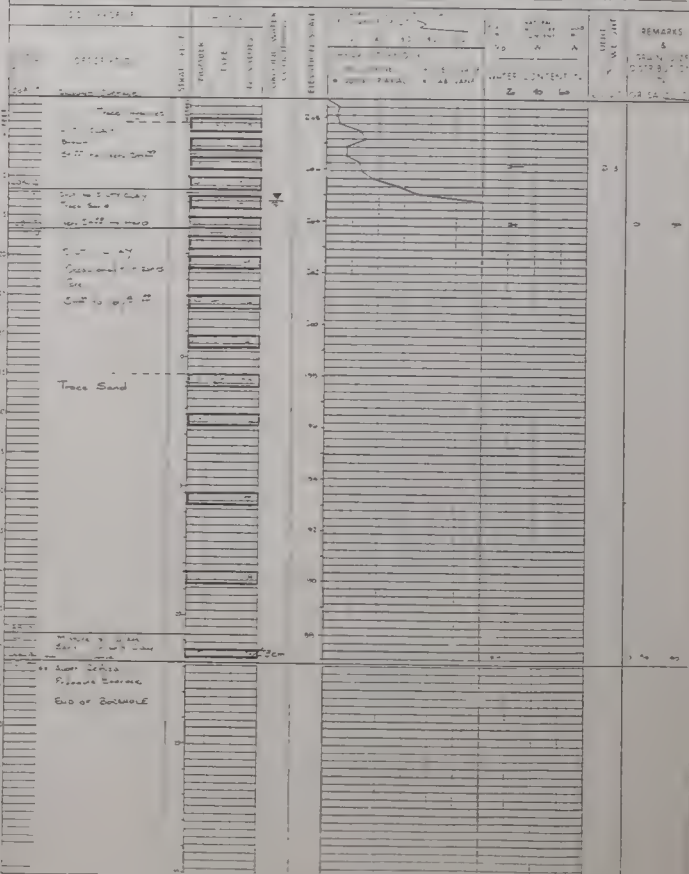
NOT TO SCALE



LONGITUDINAL SECTION

NOTES:

- 1- REMOVE TOPSOIL &/OR SOFT SUBSOIL UNDER AREA OF COMPACTED GRANULAR 'A' & EARTH FILL.
- 2- PLACE GRANULAR 'A' & EARTH FILL TO BOTTOM OF FOOTING LEVEL, COMPACTED ACCORDING TO CURRENT M.T.C. STANDARDS.
- 3- CONSTRUCT CONCRETE FOOTING.
- 4- PLACE REMAINDER OF GRANULAR 'A' & EARTH FILL AS REQUIRED.

[illegible]

[illegible]

[illegible][illegible]

METRIC

N# 56-B-01 LOCATION 100' ON 100' ON 100' ON
DIST 1 HWY 64 N BOREHOLE TYPE 100' ON COMPLETED BY BE
DATUM 100' ON DATE 56-00-01 CHECKED BY

[illegible]

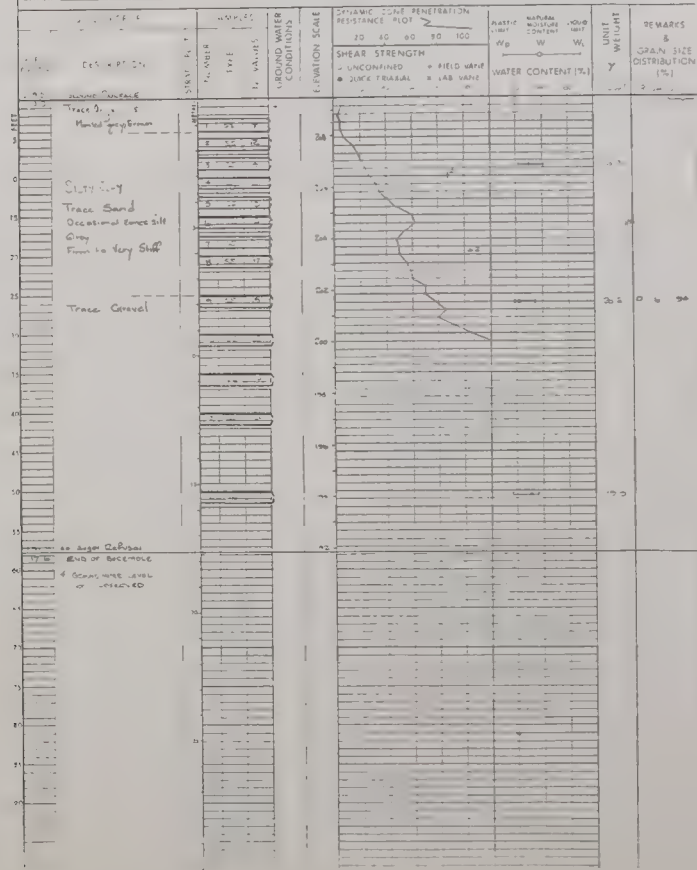
METRIC

| SOIL PROFILE | | SAMPLES | | ELEVATION SCALE | ELEVATION | DEPTH | WET WEIGHT | DRY WEIGHT | WATER CONTENT (%) | REMARKS |
|--------------|----------------------|---------|------|-----------------|-----------|-------|------------|------------|-------------------|---------|
| ELEV. | DESCRIPTION | NO. | TYPE | | | | | | | |
| 10.00 | Topsoil (0-10 cm) | 1 | 1 | 10.00 | 10.00 | 0.00 | | | | |
| 9.50 | Topsoil (10-20 cm) | 2 | 1 | 9.50 | 9.50 | 0.00 | | | | |
| 9.00 | Topsoil (20-30 cm) | 3 | 1 | 9.00 | 9.00 | 0.00 | | | | |
| 8.50 | Topsoil (30-40 cm) | 4 | 1 | 8.50 | 8.50 | 0.00 | | | | |
| 8.00 | Topsoil (40-50 cm) | 5 | 1 | 8.00 | 8.00 | 0.00 | | | | |
| 7.50 | Topsoil (50-60 cm) | 6 | 1 | 7.50 | 7.50 | 0.00 | | | | |
| 7.00 | Topsoil (60-70 cm) | 7 | 1 | 7.00 | 7.00 | 0.00 | | | | |
| 6.50 | Topsoil (70-80 cm) | 8 | 1 | 6.50 | 6.50 | 0.00 | | | | |
| 6.00 | Topsoil (80-90 cm) | 9 | 1 | 6.00 | 6.00 | 0.00 | | | | |
| 5.50 | Topsoil (90-100 cm) | 10 | 1 | 5.50 | 5.50 | 0.00 | | | | |
| 5.00 | Topsoil (100-110 cm) | 11 | 1 | 5.00 | 5.00 | 0.00 | | | | |
| 4.50 | Topsoil (110-120 cm) | 12 | 1 | 4.50 | 4.50 | 0.00 | | | | |
| 4.00 | Topsoil (120-130 cm) | 13 | 1 | 4.00 | 4.00 | 0.00 | | | | |
| 3.50 | Topsoil (130-140 cm) | 14 | 1 | 3.50 | 3.50 | 0.00 | | | | |
| 3.00 | Topsoil (140-150 cm) | 15 | 1 | 3.00 | 3.00 | 0.00 | | | | |
| 2.50 | Topsoil (150-160 cm) | 16 | 1 | 2.50 | 2.50 | 0.00 | | | | |
| 2.00 | Topsoil (160-170 cm) | 17 | 1 | 2.00 | 2.00 | 0.00 | | | | |
| 1.50 | Topsoil (170-180 cm) | 18 | 1 | 1.50 | 1.50 | 0.00 | | | | |
| 1.00 | Topsoil (180-190 cm) | 19 | 1 | 1.00 | 1.00 | 0.00 | | | | |
| 0.50 | Topsoil (190-200 cm) | 20 | 1 | 0.50 | 0.50 | 0.00 | | | | |
| 0.00 | Topsoil (200-210 cm) | 21 | 1 | 0.00 | 0.00 | 0.00 | | | | |

OFFICE REPORT ON SOIL EXPLORATION

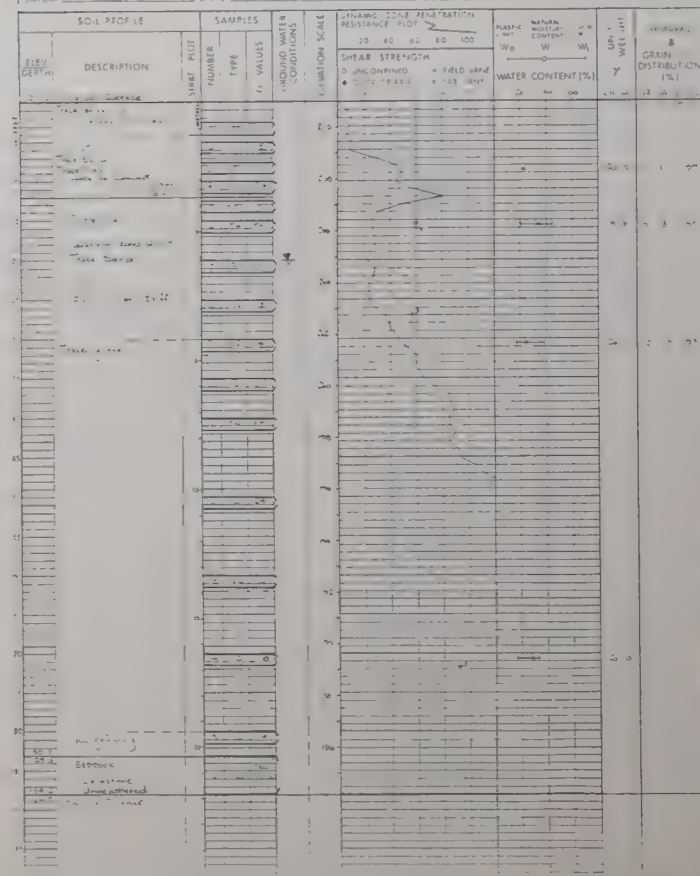
| SOIL PROFILE | | SAMPLES | | ELEVATION SCALE | ELEVATION | DEPTH | WET WEIGHT | DRY WEIGHT | WATER CONTENT (%) | REMARKS |
|--------------|----------------------|---------|------|-----------------|-----------|-------|------------|------------|-------------------|---------|
| ELEV. | DESCRIPTION | NO. | TYPE | | | | | | | |
| 10.00 | Topsoil (0-10 cm) | 1 | 1 | 10.00 | 10.00 | 0.00 | | | | |
| 9.50 | Topsoil (10-20 cm) | 2 | 1 | 9.50 | 9.50 | 0.00 | | | | |
| 9.00 | Topsoil (20-30 cm) | 3 | 1 | 9.00 | 9.00 | 0.00 | | | | |
| 8.50 | Topsoil (30-40 cm) | 4 | 1 | 8.50 | 8.50 | 0.00 | | | | |
| 8.00 | Topsoil (40-50 cm) | 5 | 1 | 8.00 | 8.00 | 0.00 | | | | |
| 7.50 | Topsoil (50-60 cm) | 6 | 1 | 7.50 | 7.50 | 0.00 | | | | |
| 7.00 | Topsoil (60-70 cm) | 7 | 1 | 7.00 | 7.00 | 0.00 | | | | |
| 6.50 | Topsoil (70-80 cm) | 8 | 1 | 6.50 | 6.50 | 0.00 | | | | |
| 6.00 | Topsoil (80-90 cm) | 9 | 1 | 6.00 | 6.00 | 0.00 | | | | |
| 5.50 | Topsoil (90-100 cm) | 10 | 1 | 5.50 | 5.50 | 0.00 | | | | |
| 5.00 | Topsoil (100-110 cm) | 11 | 1 | 5.00 | 5.00 | 0.00 | | | | |
| 4.50 | Topsoil (110-120 cm) | 12 | 1 | 4.50 | 4.50 | 0.00 | | | | |
| 4.00 | Topsoil (120-130 cm) | 13 | 1 | 4.00 | 4.00 | 0.00 | | | | |
| 3.50 | Topsoil (130-140 cm) | 14 | 1 | 3.50 | 3.50 | 0.00 | | | | |
| 3.00 | Topsoil (140-150 cm) | 15 | 1 | 3.00 | 3.00 | 0.00 | | | | |
| 2.50 | Topsoil (150-160 cm) | 16 | 1 | 2.50 | 2.50 | 0.00 | | | | |
| 2.00 | Topsoil (160-170 cm) | 17 | 1 | 2.00 | 2.00 | 0.00 | | | | |
| 1.50 | Topsoil (170-180 cm) | 18 | 1 | 1.50 | 1.50 | 0.00 | | | | |
| 1.00 | Topsoil (180-190 cm) | 19 | 1 | 1.00 | 1.00 | 0.00 | | | | |
| 0.50 | Topsoil (190-200 cm) | 20 | 1 | 0.50 | 0.50 | 0.00 | | | | |
| 0.00 | Topsoil (200-210 cm) | 21 | 1 | 0.00 | 0.00 | 0.00 | | | | |

N.P. Sy 25 00 LOCAL ON SEA 3. 250 4 ORIGINATED BY
DIST 1 HWY 6 NEW BOREHOLE TYPE Horizontal Screen COMPILED BY
DATUM Geodetic DATE 86. 05. 10 CHECKED BY

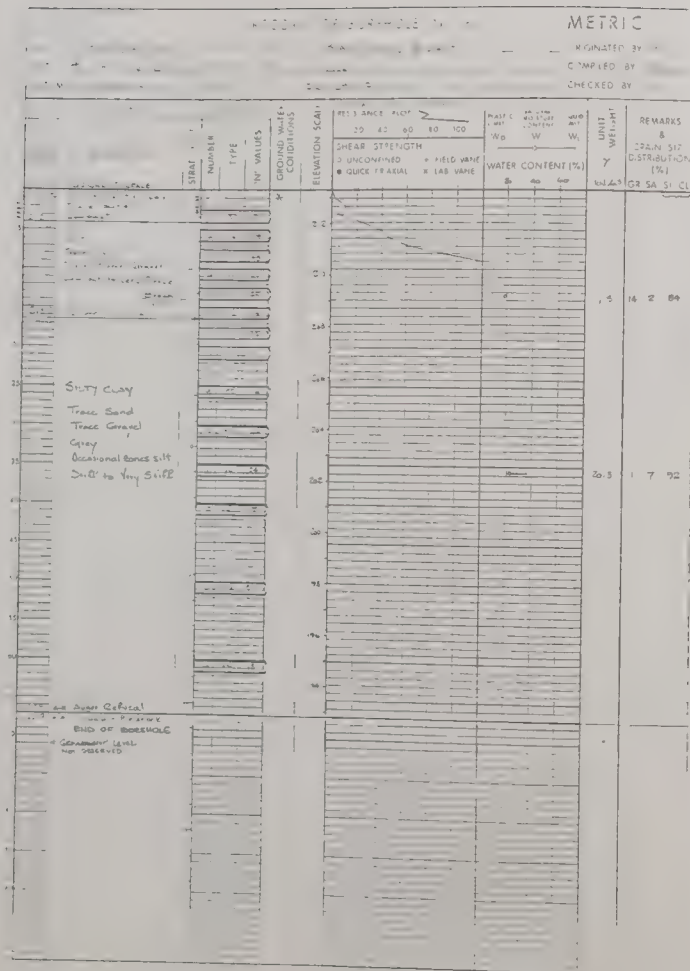
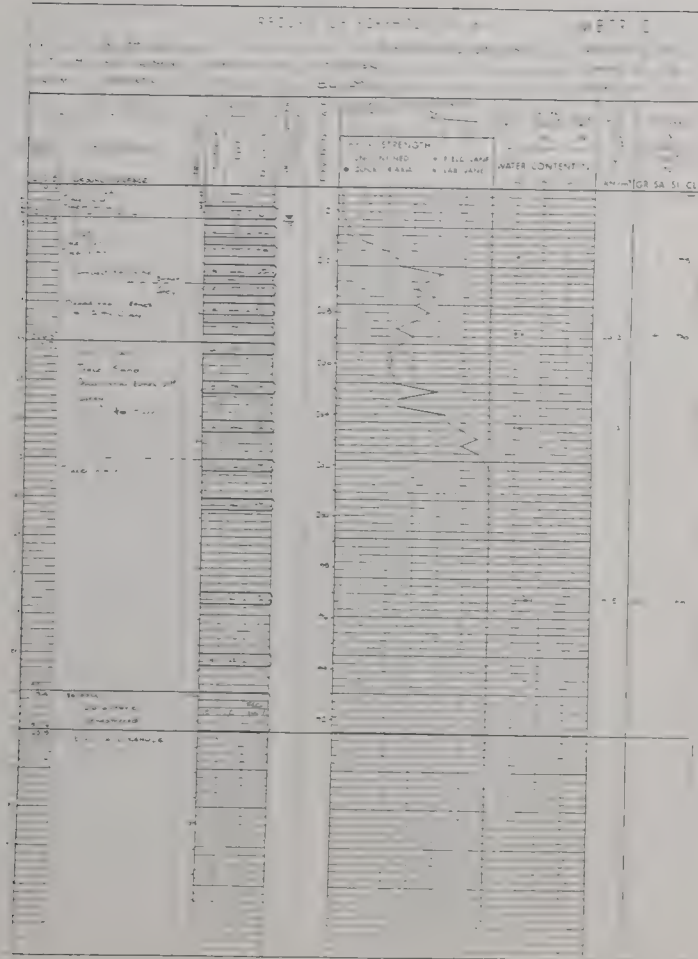


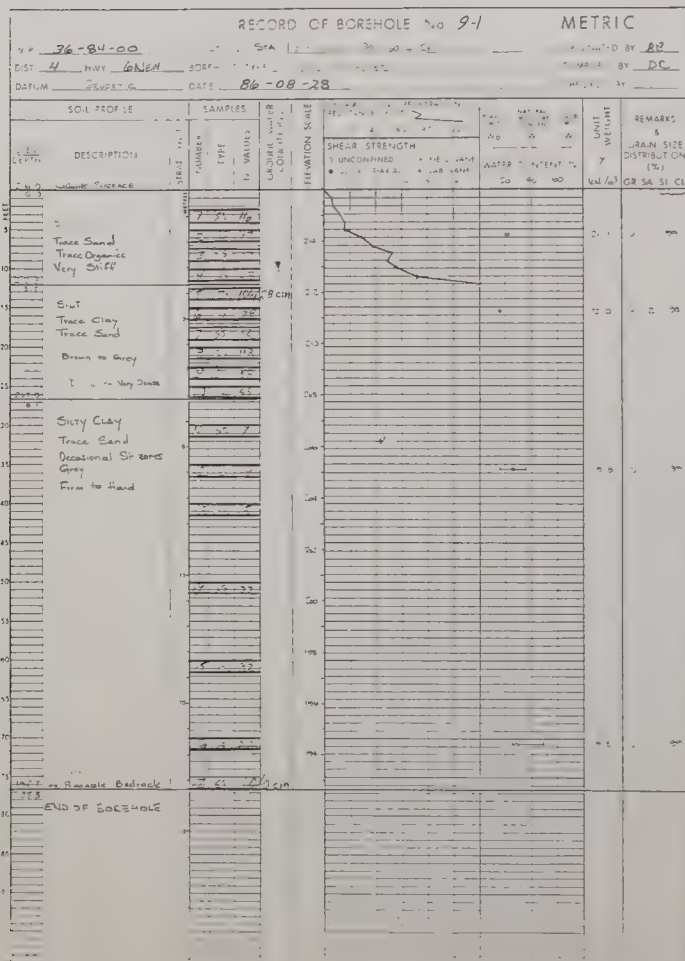
OFFICE REPORT ON SOIL EXPLORATION

DIST 4 HWY 0 NEW BOREHOLE TYPE U.S. - 1000 3/2 S.W. CASE COMPILED BY SS
 CATH CHROMIUM DATE 80-07-09 CHECKED BY _____



OFFICE REPORT ON SOIL EXPLORATION





[illegible]

2. TOP OF BOREHOLE No 11-2

METRIC

HP 36-BH-00 LOC# 100-10 STA 19+148 % 30m ORIGINATED BY BB
 DATE 08-08-21 CHECKED BY

DATE 08-08-21 CHECKED BY

REMARKS & TEST SIZE

SHEAR STRENGTH

• DUNE TRIAXIAL • LAB WANE

WATER CONTENT (%)

Y

100

90

80

70

60

50

40

30

20

10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

200

210

220

230

240

250

260

270

280

290

300

310

320

330

340

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360

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490

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670

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690

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710

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730

740

750

760

770

780

790

800

810

820

830

840

850

860

870

880

890

900

910

920

930

940

950

960

970

980

990

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1010

1020

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1040

1050

1060

1070

1080

1090

1100

1110

1120

1130

1140

1150

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1170

1180

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1200

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2140

2150

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2170

2180

2190

2200

2210

2220

2230

2240

2250

2260

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2300

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3080

3090

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3170

3180

3190

3200

3210

3220

3230

3240

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3310

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3370

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3690

3700

3710

3720

3730

3740

3750

3760

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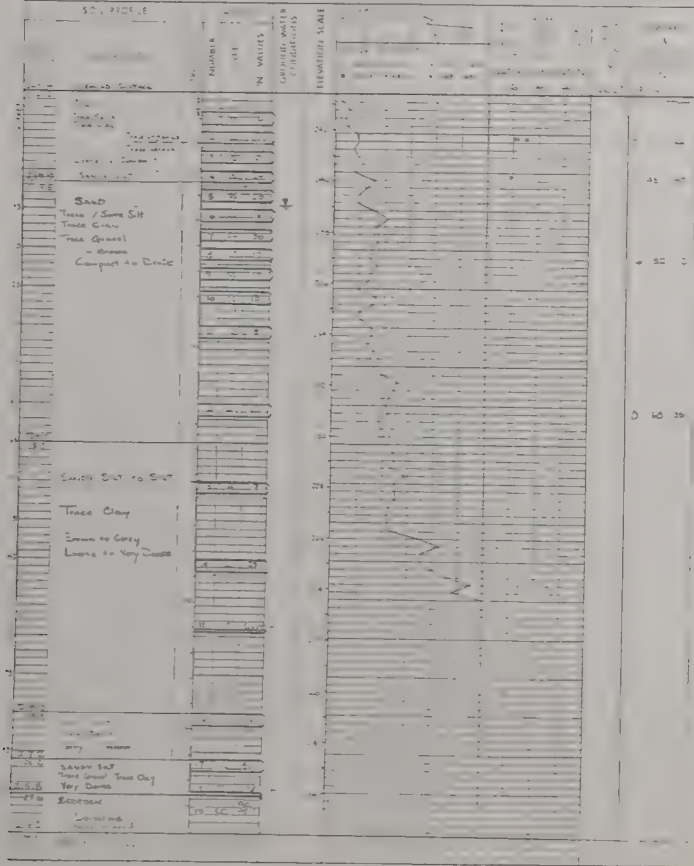
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OFFICE REPORT ON SOIL EXPLORATION

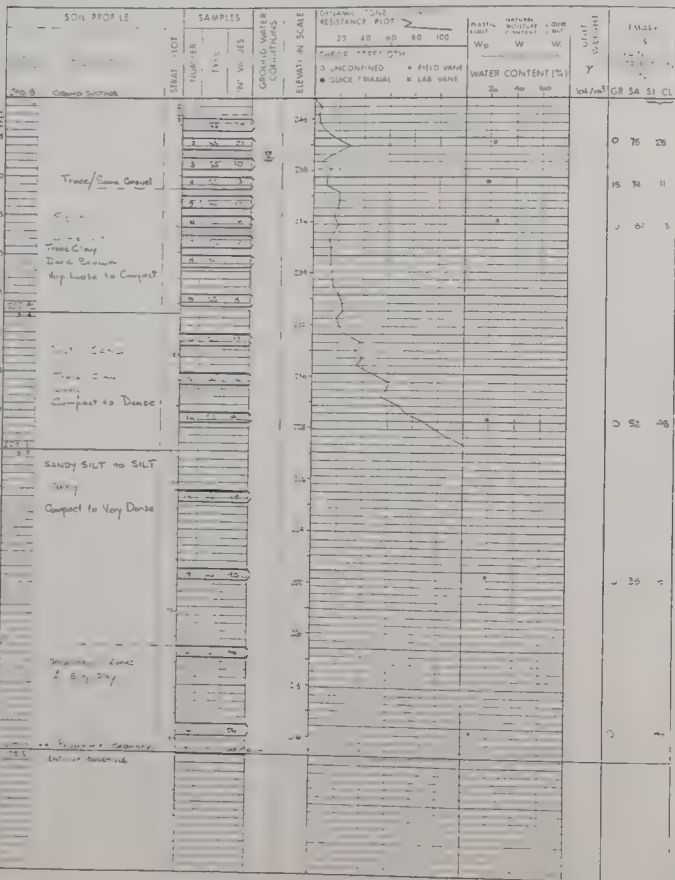
VP 26 23 03 LOCATION 445 W 4TH St. 24-2330 37-24
DIST 4 HW 6 NEW SCOROLE TYPE H2 SURVEY, BW CASING, 22 ROCK CORE
DATUM GERSBEG DATE 84 07 20 COMPILED BY BB



OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 14-2 METRIC

| | | | | | | | |
|------|-----------------|------------|-------------------|------------------|-------------------------|---------------|-----------|
| HP | <u>96-24 00</u> | LOCATION | <u>Hwy 16 New</u> | STA | <u>24 + 63.9 55 = 0</u> | ORIGINATED BY | <u>RE</u> |
| | <u>4</u> | Hwy 16 New | BOREHOLE TYPE | <u>AS Aug 68</u> | | COMPILED BY | <u>EC</u> |
| DATE | <u>Sept-68</u> | DATE | <u>Oct 68</u> | | | CHECKED BY | |



[illegible]

OFFICE REPORT ON SOIL EXPLORATION

| CORRECTION RECORD OF BOREHOLE No. 16-3 | | | | METRIC | |
|--|-------|---------|----------|---------------------------|------|
| SOL. REMARKS | | SAMPLES | | SINAMITE CONE PENETRATION | |
| DEPTH | START | END | ESTIMATE | 20 | 40 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 |
| 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 |
| 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 |
| 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 |
| 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 |
| 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 |
| 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 |
| 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 |
| 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 |
| 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 |
| 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |
| 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 |
| 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 |
| 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 |
| 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 |
| 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 |
| 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 |
| 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 |
| 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 |
| 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 |
| 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 |
| 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 |
| 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 |
| 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 |
| 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 |
| 30 | | | | | |

APPENDIX C

Alignment Calculations

| CURVE | 110 | CURVE ELEMENTS | | | |
|------------------|-----------|----------------|--------------|----|---------|
| TTB | 313.041 | DEF | 18 35 14.00 | LT | |
| TTA | 313.041 | BACK | 6 27 58.00 | | |
| TOTAL LENGTH | 621.621 | AHEAD | 347 52 44.00 | | |
| SPIRAL BACK | | | | | |
| PARAMETER | 450.000 | ANGLE | 2 34 41.92 | x | 134.973 |
| LENGTH | 135.000 | PHI C | 0 51 33.92 | y | 2.025 |
| LONG TAN | 90.010 | BACK | 6 27 58.00 | p | 0.506 |
| SHORT TAN | 45.009 | AHEAD | 3 53 16.08 | q | 67.495 |
| CHORD | 134.988 | CHORD | 5 36 24.08 | | |
| CIRCULAR SECTION | | | | | |
| RADIUS | 1,500.000 | DELTA | 13 25 50.17 | | |
| LENGTH | 351.612 | BACK | 3 53 16.08 | | |
| TANGENT | 176.616 | AHEAD | 350 27 25.92 | | |
| EXTERNAL | 10.362 | CHORD | 357 10 21.00 | | |
| CHORD | 350.808 | | | | |
| SPIRAL AHEAD | | | | | |
| PARAMETER | 450.000 | ANGLE | 2 34 41.92 | x | 134.973 |
| LENGTH | 135.000 | PHI C | 0 51 33.92 | y | 2.025 |
| LONG TAN | 90.010 | BACK | 350 27 25.92 | p | 0.506 |
| SHORT TAN | 45.009 | AHEAD | 347 52 44.00 | q | 67.495 |
| CHORD | 134.988 | CHORD | 348 44 17.92 | | |

CURVE POINTS

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,783,633.727 | 265,574.379 | |
| TS | 4,783,397.680 | 267,057.739 | 23,142.143 |
| ST | 4,784,041.792 | 267,027.260 | 23,763.755 |
| PI | 4,783,708.730 | 267,092.992 | 23,455.184 |
| SB | 4,783,487.117 | 267,067.875 | 23,232.153 |
| SC | 4,783,532.022 | 267,070.927 | 23,277.143 |
| CI | 4,783,708.232 | 267,082.902 | 23,453.759 |
| CS | 4,783,882.403 | 267,053.622 | 23,628.755 |
| SA | 4,783,926.789 | 267,046.160 | 23,673.764 |

| CURVE | 120 | CURVE ELEMENTS | | | |
|------------------|-----------|----------------|--------------|----|--|
| TTB | 111.789 | DEF | 2 33 41.75 | LT | |
| TTA | 111.789 | BACK | 347 52 44.00 | | |
| TOTAL LENGTH | 223.542 | AHEAD | 345 19 2.25 | | |
| CIRCULAR SECTION | | | | | |
| RADIUS | 5,000.000 | DELTA | 2 33 41.75 | | |
| LENGTH | 223.542 | BACK | 347 52 44.00 | | |
| TANGENT | 111.789 | AHEAD | 345 19 2.25 | | |
| EXTERNAL | 1.250 | CHORD | 346 35 53.12 | | |
| CHORD | 223.523 | | | | |

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,783,609.995 | 262,011.436 | |
| PC | 4,784,659.889 | 266,899.965 | 24,421.199 |
| PT | 4,784,877.325 | 266,848.157 | 24,644.740 |
| PI | 4,784,769.186 | 266,876.492 | 24,532.988 |

| | | |
|--------------|---------|--------------------|
| CURVE | 130 | CURVE ELEMENTS |
| TTB | 70.150 | DEF 2 0 34.02 LT |
| TTA | 70.150 | BACK 345 19 2.25 |
| TOTAL LENGTH | 140.286 | AHEAD 343 18 28.23 |

CIRCULAR SECTION

| | | |
|----------|-----------|--------------------|
| RADIUS | 4,000.000 | DELTA 2 0 34.02 |
| LENGTH | 140.286 | BACK 345 19 2.25 |
| TANGENT | 70.150 | AHEAD 343 18 28.23 |
| EXTERNAL | 0.615 | CHORD 344 18 45.24 |
| CHORD | 140.279 | |

CURVE POINTS

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,783,863.460 | 262,978.781 | |
| PC | 4,784,877.324 | 266,848.158 | 24,644.741 |
| PT | 4,785,012.377 | 266,810.228 | 24,785.027 |
| PI | 4,784,945.183 | 266,830.377 | 24,714.891 |

| | | |
|--------------|---------|---------------------------|
| CURVE | 140 | CURVE ELEMENTS |
| TTB | 54.166 | DEF 6 25 28.20 LT |
| TTA | 31.150 | BACK 343 18 28.23 |
| TOTAL LENGTH | 85.238 | AHEAD 336 53 0.03 |
| SPIRAL BACK | | |
| PARAMETER | 200.000 | ANGLE 6 25 28.20 x 85.120 |
| LENGTH | 85.238 | PHI C 2 20 40.22 y 3.485 |
| LONG TAN | 54.166 | BACK 343 18 28.23 |
| SHORT TAN | 31.150 | AHEAD 336 53 0.03 |
| CHORD | 85.191 | CHORD 340 57 48.01 |
| RADIUS 1 | 4000 | |
| RADIUS 2 | 420.000 | |

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,785,012.377 | 266,390.228 | |
| CS | 4,785,012.377 | 266,810.228 | 24,785.027 |
| CS | 4,785,092.910 | 266,782.440 | 24,870.265 |
| PI | 4,785,064.261 | 266,794.670 | 24,839.193 |

| | | | | | |
|--------------|---------|----------------|--------------|----|--|
| CURVE | 150 | CURVE ELEMENTS | | | |
| TTB | 88.849 | DEF | 23 17 40.03 | LT | |
| TTA | 132.084 | BACK | 336 53 0.03 | | |
| TOTAL LENGTH | 218.376 | AHEAD | 313 35 20.00 | | |

| | | | | | |
|--------------|---------|----------------|--------------|----|--|
| CURVE | 160 | CURVE ELEMENTS | | | |
| TTB | 159.644 | DEF | 4 34 15.77 | LT | |
| TTA | 159.644 | BACK | 347 52 44.00 | | |
| TOTAL LENGTH | 319.119 | AHEAD | 343 18 28.23 | | |

CIRCULAR SECTION

| | | | |
|----------|---------|-------|-------------|
| RADIUS | 420.000 | DELTA | 16 47 54.00 |
| LENGTH | 123.138 | BACK | 336 53 0.03 |
| TANGENT | 62.014 | AHEAD | 320 5 6.03 |
| EXTERNAL | 4.554 | CHORD | 328 29 3.03 |
| CHORD | 122.698 | | |

SPIRAL AHEAD

| | | | | | |
|-----------|---------|-------|--------------|---|--------|
| PARAMETER | 200.000 | ANGLE | 6 29 46.03 | x | 95.116 |
| LENGTH | 95.238 | PHI C | 2 9 54.50 | y | 3.596 |
| LONG TAN | 63.535 | BACK | 320 5 6.03 | p | 0.899 |
| SHORT TAN | 31.785 | AHEAD | 313 35 20.00 | q | 47.599 |
| CHORD | 95.184 | CHORD | 315 45 14.50 | | |

CIRCULAR SECTION

| | | | |
|----------|-----------|-------|--------------|
| RADIUS | 4,000.000 | DELTA | 4 34 15.77 |
| LENGTH | 319.119 | BACK | 347 52 44.00 |
| TANGENT | 159.644 | AHEAD | 343 18 28.23 |
| EXTERNAL | 3.185 | CHORD | 345 35 36.11 |
| CHORD | 319.035 | | |

CURVE POINTS

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,784,928.016 | 266,396.162 | |
| SC | 4,785,092.910 | 266,782.439 | 24,870.265 |
| ST | 4,785,265.694 | 266,651.888 | 25,088.641 |
| PI | 4,785,174.625 | 266,747.557 | 24,959.114 |
| CI | 4,785,149.945 | 266,758.093 | 24,932.279 |
| CS | 4,785,197.509 | 266,718.302 | 24,993.403 |
| SA | 4,785,221.888 | 266,697.907 | 25,025.188 |

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,783,845.972 | 262,961.056 | |
| PC | 4,784,685.887 | 266,971.880 | 24,452.515 |
| PT | 4,784,994.889 | 266,792.503 | 24,717.634 |
| PI | 4,784,941.972 | 266,838.358 | 24,612.159 |

| CURVE | 170 | CURVE ELEMENTS | | | | |
|------------------|---------|----------------|-----|----|-------|----------|
| TTB | 159.273 | DEF | 29 | 43 | 8.23 | LT |
| TTA | 159.273 | BACK | 343 | 18 | 28.23 | |
| TOTAL LENGTH | 313.089 | AHEAD | 313 | 35 | 20.00 | |
| SPIRAL BACK | | | | | | |
| PARAMETER | 200.000 | ANGLE | 6 | 29 | 46.03 | x 95.116 |
| LENGTH | 95.238 | PHI C | 2 | 9 | 54.50 | y 3.596 |
| LONG TAN | 63.535 | BACK | 343 | 18 | 28.23 | p 0.899 |
| SHORT TAN | 31.785 | AHEAD | 336 | 48 | 42.20 | q 47.599 |
| CHORD | 95.184 | CHORD | 341 | 8 | 33.73 | |
| CIRCULAR SECTION | | | | | | |
| RADIUS | 420.000 | DELTA | 16 | 43 | 36.17 | |
| LENGTH | 122.613 | BACK | 336 | 48 | 42.20 | |
| TANGENT | 61.746 | AHEAD | 320 | 5 | 6.03 | |
| EXTERNAL | 4.514 | CHORD | 328 | 26 | 54.12 | |
| CHORD | 122.178 | | | | | |
| SPIRAL AHEAD | | | | | | |
| PARAMETER | 200.000 | ANGLE | 6 | 29 | 46.03 | x 95.116 |
| LENGTH | 95.238 | PHI C | 2 | 9 | 54.50 | y 3.596 |
| LONG TAN | 63.535 | BACK | 320 | 5 | 6.03 | p 0.899 |
| SHORT TAN | 31.785 | AHEAD | 313 | 35 | 20.00 | q 47.599 |
| CHORD | 95.184 | CHORD | 315 | 45 | 14.50 | |

CURVE POINTS

| | NORTH | EAST | STATION |
|----|---------------|-------------|------------|
| CC | 4,784,924.902 | 266,374.076 | |
| TS | 4,785,000.204 | 266,790.911 | 24,777.181 |
| ST | 4,785,262.580 | 266,629.801 | 25,090.271 |
| PI | 4,785,152.765 | 266,745.163 | 24,936.454 |
| SB | 4,785,061.061 | 266,772.662 | 24,840.716 |
| SC | 4,785,090.279 | 266,760.146 | 24,872.419 |
| CI | 4,785,147.036 | 266,735.834 | 24,934.165 |
| CS | 4,785,194.395 | 266,696.214 | 24,995.033 |
| SA | 4,785,218.774 | 266,675.820 | 25,026.818 |

| CURVE | 180 | CURVE ELEMENTS | | | | |
|------------------|-----------|----------------|-----|----|-------|----|
| TTB | 23.366 | DEF | 0 | 53 | 33.00 | LT |
| TTA | 23.366 | BACK | 107 | 27 | 50.00 | |
| TOTAL LENGTH | 46.731 | AHEAD | 106 | 34 | 17.00 | |
| CIRCULAR SECTION | | | | | | |
| RADIUS | 3,000.000 | DELTA | 0 | 53 | 33.00 | |
| LENGTH | 46.731 | BACK | 107 | 27 | 50.00 | |
| TANGENT | 23.366 | AHEAD | 106 | 34 | 17.00 | |
| EXTERNAL | 0.091 | CHORD | 107 | 1 | 3.50 | |
| CHORD | 46.731 | | | | | |

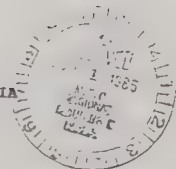
| | NORTH | EAST | STATION |
|----|---------------|-------------|-----------|
| CC | 4,775,328.231 | 268,234.023 | |
| PC | 4,772,466.512 | 267,333.709 | 9,753.786 |
| PT | 4,772,452.836 | 267,378.394 | 9,800.517 |
| PI | 4,772,459.500 | 267,355.998 | 9,777.152 |

APPENDIX D

Minutes of Meetings

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File No. 9576-01/14



DATE: 18 April 1985

LOCATION: Transport Canada Site Office
Hamilton Airport

PRESENT: Mr. R. D. Lane, Manager, Design and Construction
Transport Canada
Mr. P. Shaver, MTC
Mr. B. Ogden, MTC
Mr. J. Horton, MMD

The following summarizes the major points of discussion:

1. Mr. Lane outlined the Transport Canada requirements for the west-end of the runway. These consist of the following:

A. Glide Path

An approach surface slope is required starting at the end of the blast area (60 metres from the end of the runway) increasing at a rate of 1:60 within 15° either side of the runway blast area. In addition, there is a transitional surface starting at the edge of the runway and increasing at a rate of 1:7 along the entire length of the runway to 2400 metres from the end of the blast area (at this point it intersects with the 1:60 slope). Nothing can be built within the area above the glide path and the transitional slope surface areas.

B. Middle Marker and High Intensity Lighting

The high intensity lighting extends 810 metres in length, starting 90 metres from the end of the runway. The lights are spaced 30 metres apart, approximately .5 metres above the finished grade at the end of the runway.

The middle marker is located 950 metres from the end of the runway.

With an extension of the runway, additional land would be required for the middle marker and high intensity lighting. However, the lighting could be placed over the highway. The elevation of the lighting could be changed somewhat to accommodate the future highway.

C. Navigation

An instrument landing system (ILS) requires a graded area extending 335 metres beyond the end of the runway.

A microwave landing system (MLS) may be installed in the long term (approximately 20 years) and would not require this graded area.

2. Plans were provided showing all of the above requirements. Plans showing the glide path should be used as guidelines only. The end of the runway elevation and other elevations based on this are incorrect.

A plan was provided showing the relocated hydro towers. Hydro relocated several towers at the west-end of the runway to match the glide path requirements for an 8,000 ft. runway. Plans provided show approximate locations only. Ontario Hydro is now in the process of preparing as-built plans and they should be contacted directly for these.

With an expansion to a 10,000 ft. runway, the hydro towers at the west end of the runway would have to be moved or the transmission lines buried. Ontario Hydro states that these lines cannot be lowered further.

Hydro relocation for the 8,000 ft. runway cost approximately 1.7 million dollars.

3. The 8,000 ft. runway will have a finished elevation of 236.480. A 10,000 ft. runway would have an elevation of 235.32. These elevations should be employed for determining the glide path area.
4. The Butter Road realignment should be constructed this season. Mr. Joe Pavelka of the Regional Municipality of Hamilton-Wentworth should be contacted for details.
5. An archaeological study was conducted on airport lands prior to construction. No significant archaeological sites were found on the airport property. However, a site was located in an area immediately south of the high intensity lighting. This was referred to as the Donovan site.
6. It was agreed that Dillon would prepare plans showing alternative alignments within the vicinity of the airport lands and forward to Transport Canada for their comments.

These Minutes of Meeting were prepared by Mr. J. Horton of M. M. Dillon Limited. Any errors or omissions should be reported to him.

Distribution

All present
F. Leech

MEMO TO: File

CC: PS
BO
JPH
IW

FROM: I. Williams

SUBJECT: Highway 6 New Hamilton - Caledonia
Route Location and Pre-design Study

FILE: 9576-01/14

DATE: 4 June 1985



CENTRAL REGION PRESENTATION

This project was presented to the MTC Central Regional Director and his staff on 3 June 1985.

Those in attendance were:

. B. Ridell - MTC, Director
. P. Billings - MTC, Planning and Design
. A. Wittenberg - MTC, Planning and Design
. L. Dutchak - MTC, Planning and Design ✓
. W. Kelly - Trans Capital
. H. Jagasia - MTC, Structural
. G. Burkhardt - MTC, Structural
. J. Klowak - MTC, Geotechnical
. P. Verok - MTC, Geotechnical
. J. Cullen - MTC, Regional Construction
. J. Desrocher - MTC, Planning and Design
. H. McNeely - MTC, Environmental Unit
. P. Howes - MTC, Traffic Office

1. BACKGROUND

Mr. P. Shaver the Ministry's Project Manager gave a brief introductory background to the project. Mr. Shaver noted that the 1976 Hamilton to Nanticoke Joint Use Study concluded that no decision could be made on an alignment for Highway 6 New between Hamilton and Caledonia pending:

- completion of the Hamilton-Wentworth Regional Official Plan and
- formulation of the Hamilton (Mt. Hope) airport expansion plans.

As both these issues have now been resolved and in response to pressure from the local Municipalities and Transport Canada regarding access to the area the Ministry in the fall of 1984, engaged M.M. Dillon Limited to carry out a route location and pre-design study for Highway 6 New between Caledonia and Hamilton.

Mr. Shaver explained the prime purposes of this presentation are:

- to summarize the history of the project for the benefit of the New Central Regional Director (Mr. Brian Ridell) and
- to present to the group the information that will be presented at the first series of public information centres on 24 and 25 June.

2. DETERMINATION OF THE INTENSIVE STUDY AREA

Mr. Williams then made a presentation on the investigations that have been carried out to define the intensive study area. The following are the major points of this presentation:

- there were originally three corridors for Highway 6 New: the west, the central and the east
- only the west alignment connects to an existing provincial freeway (Highway 403) the other two corridors connect to the proposed Regional Municipal east-west/north-south facility.
- traffic volume assignments to the three corridors are not conclusive in terms of identifying a preferred corridor
- objectives for Highway 6 New were defined (included in the hand-out) and the three corridors were compared in terms of their ability to meet the objectives
- MTC has selected the west corridor as that which most closely meets the objectives. The east and central corridors will therefore not be studied any further
- the key objectives in selecting the west corridor were:
 - . provides best immediate access for the airport to the provincial freeway system and
 - . connects directly to a provincial Highway (Highway 403) rather than to a roadway under municipal jurisdiction.

Mr. Williams cautioned that while there is appreciable local support for a new Highway, as the project is under the EA Act, the objectives will be subject to scrutiny as will the reasons for rejecting certain corridors.

Mr. Dutchak observed that in fact certain local municipal staff members have expressed concern over the rejection of the east corridor.

There was general concurrence on the way in which the project is proceeding and the reasons for eliminating the central and east corridors.

3 DISCUSSION OF FEASIBLE ALTERNATIVES

a) Basic cross-sections

Mr. Horton presented the proposed basic cross-section for Highway 6 New. The hand-out at the meeting detailed all the alternative cross-sections and stages that have been analysed leading up to the recommended cross-section. The following are the major features of the proposal:

- the ultimate construction stage is an 8 lane urban freeway within an 80 metre right-of-way
- the initial construction stage is a 4 lane divided arterial with a rural median.
- an interim stage would be a 6 lane cross-section again with a New Jersey barrier urban median

It was pointed out that this cross-section was an important deviation from the traditional rural freeway cross-sections in Ontario.

At earlier meetings the Regional Traffic Office noted that 6 lane and 8 lane freeways should have urban medians with a barrier. This was the point that essentially lead to the proposed cross-sections for Highway 6 New.

This issue lead to a lengthy discussion. Following these discussions the following was agreed to:

- the 80 metre right-of-way was confirmed (this is desirable compared to a 100 metre right-of-way in an area where class 1 agricultural land predominates)
- the possibility of an initial two lane roadway will be identified
- a four lane rural divided arterial or freeway is a possible interim stage

- the identified ultimate cross-section will be a 6 lane rural freeway. (Note: with this cross-section a note can be added to the effect that if absolutely necessary an 8 lane urban cross-section could be accommodated within the right-of-way).

b) Feasible Alternatives

Using the 1:5000 mosaic displays Mr. Horton summarized the feasible alternatives which are under consideration and which will be presented to the public.

Two alternatives were shown as having been rejected. These were the two most westerly alternatives, and are well removed from existing Highway 6. These were rejected as there is a significant traffic desire from the south to the mountain and central down-town areas of Hamilton. Consequently to ensure that the travellers will use new Highway 6 and the Caledonia by-pass a reasonably good connection between Highway 6 (New) and existing 6 must be available. The extreme westerly alignments would not provide this. Neither had they any major advantages, consequently they have been rejected.

Mr. Horton also summarized the probable locations of interchanges these are:

- Greens Road (the current northerly terminus of the Caledonia by-pass).
- White Church Road (a Regional Road designated as a major east west thoroughfare by the Regional Municipality)
- Glancaster Road (to service the south end of the airport)
- Butter Road (also serving the south end of the airport)
- Book Road (servicing the north end of the airport and the future location of the passenger terminal) and
- Highway 403

No interchange is proposed at existing Highway 53 however, the possibility of ramps at Highway 53 - Highway - 6 Highway 403 east has been protected for, in order to serve the Allarco development in the area if this proceeds.

The group agreed that these proposals should be carried forward to the Council presentations and public information centres.

At Mr. Wittenberg's suggestion a note will be added to the displays that a study is about to proceed into traffic operational problems of the south of the existing Caledonia by-pass.

4. OTHER ISSUES

Study schedule and Construction Timing

At present no construction is planned within the 5 year program. The consultant suggested that certain members of the public and municipal staff may express concern over this, wishing the project to proceed earlier.

It was agreed that this position would not be changed at present. It would be noted that even if the program was accelerated the environmental assessment process, preliminary design, final design and property acquisition would mean it would be unlikely that construction could proceed before 5 years in any event.

It was also noted that the current study would address construction staging.

In answer to a question from Mr. McNelly it was confirmed that the environmental assessment report would be a full one stage submission the approval of which would allow property acquisition and construction to proceed.

Approval was given for the project to proceed to the Council meetings later in June and the public information centres on June 24 and 25.

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File No. 9576-01/14

WP 36-84-00

MINUTES OF MEETING FOR REGIONAL PRESENTATION

25 September 1985



Those in attendance were:

| | |
|---------------------|--|
| • Mr. B. Riddell | - MTC, Regional Director |
| • Mr. P. Billings | - MTC, Engineering & R-O-W |
| • Mr. A. Wittenberg | - MTC, Planning and Design |
| • Mr. L. Dutchak | - MTC, Planning and Design |
| • Mr. P. Shaver | - MTC, Planning and Design |
| • Mr. M. Chan | - MTC, Planning and Design |
| • Mr. R. Romaniw | - MTC, Planning and Design |
| • Mr. S. Killaire | - MTC, Planning and Design |
| • Mr. H. McNeely | - MTC, Environmental Unit |
| • Mr. B. Ogden | - MTC, Environmental Unit |
| • Mr. J. Nuttall | - MTC, Environmental Unit |
| • Mr. F. Leech | - MTC, Head Office, Environmental Office |
| • Mr. P. Howes | - MTC, Traffic Office |
| • Mr. D. Moule | - MTC, Regional Maintenance |
| • Mr. J. Klouak | - MTC, Geotechnical |
| • Mr. K. Ganesh | - MTC, Geotechnical |
| • Mr. J. Percy | - MTC, District 4 |
| • Mr. G. Norman | - MTC, District 4 |
| • Mr. W. Kelly | - Trans Capital Branch |
| • Mr. I. Williams | - M. M. Dillon Limited |
| • Mr. J. Horton | - M. M. Dillon Limited |

The presentation began with Mr. Shaver outlining the agenda and the reasons for the presentation. Mr. Shaver then presented the study background and the progress to date. Most of the study background material had been dealt with at the previous Regional presentation in June of this year. Since then the alternative alignments have been presented to the area municipality councils and displayed at two Public Information Centres. Over the summer a recommended alignment was determined. This meeting is being held to review the recommended alignment, the reasons for its selection and to obtain concurrence and permission to proceed with the next phase of public consultation.

Mr. Horton reviewed the alternative alignments and presented the selection of the recommended alignment. Copies of the tables presenting the evaluation of the alternatives are attached.

Mr. Williams then presented the proposed staging. After considerable discussion it was agreed that the construction would probably begin from the north at Highway 403 and proceed by contracts in a fairly continuous manner southerly to the Caledonia Bypass. The initial facility will probably be two lanes with at-grade inter-sections at future interchange locations and grade separations at all other locations. MTC does not wish to assume Airport Road as part of an initial construction stage.

Mr. Williams then presented key issues. These are as follows:

1. Agriculture

No response has been received from the Ministry of Agriculture and Food and a special meeting has been set up on 2 October 1985 to solicit their comments. A separate interim report on the impacts of the alternatives on agricultural operations has been prepared.

2. Pet Cemetery

Over 160 responses had been received by either telephone, telex, cable or letter regarding the Pet Cemetery. It was agreed that a letter outlining that the Pet Cemetery will not be affected by Highway 6 (New) will be mailed out in conjunction with the brochures.

3. Unity Road

The impacts to the Unity Road Hamlet were outlined and the methods of mitigation reviewed. The high cost of the retaining wall (\$1.5 million) was judged to be excessive. It was decided that the Simmons property, immediately east of Highway 6 (New) on Unity Road would be acquired and a cut with 2-1 side slopes used throughout this area. At the Public Information Centres and the council presentations, the extent of community reactions will be judged and this decision may be re-evaluated at a later date.

A sketch showing the crossing of Unity Road without retaining walls will be prepared.

4. Hamilton-Wentworth Region

Some members of the Study Team and senior MTC management had recently met with officials from the Hamilton-Wentworth Region. They are now supportive of the west corridor decision. However, they were unable to schedule a presentation to a Regional Committee. Mr. Wittenberg has attempted to obtain a special presentation and expects to hear later this week on that decision.

5. Highway 53

Ramps to and from the east on Highway 403 to Highway 53 are being protected. Mr. Wittenberg suggested that these be constructed initially to establish the ultimate traffic pattern in the area.

6. Property/Proximity

Numerous comments were made during the first series of Public Information Centres with regards to proximity impacts. It was agreed that at this series of Public Information Centres, that the public will be advised that they will only be buy-outs for direct property takings. Any other buy-outs will be considered on a hardship basis only.

It was decided that no presentation to Head Office was required at this time, but a presentation may be required after the second series of Public Information Centres.

The Consultant is to undertake an assessment of future transfers to the Regional Municipality and have these included with the Council Resolutions next Spring.

The issue of a truck inspection station was raised and Mr. Shaver suggested that if a truck inspection station is required, that the Study Team should be advised of the requirements shortly.

Mr. Wittenberg suggested that the access to the airport be reviewed with Transport Canada in an attempt to provide a more direct connection between the interchange and the Transport Canada parking area.

With respect to timing, Mr. McNeely stated that MOE will require a re-examination of the EA document if construction does not commence within five years of approval.

These minutes of meeting were prepared by Mr. J. P. Horton of M. M. Dillon Limited. Any errors or omissions should be reported to him.

DISTRIBUTION

All present.

MINUTES OF MEETING

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

ROUTE LOCATION AND PRELIMINARY DESIGN STUDY

File No. 9576-01/14

WP No. 36-84-00

A presentation was made to Regional Staff of the Ministry of Transportation and Communications at their offices at 5000 Yonge Street on 27 February 1986. Those in attendance were:

| | | | |
|-------------------|-------|-----------------|---------------------|
| Mr. B. Riddell | - MTC | Mr. G. Smolskis | - MTC |
| Mr. P. Billings | - MTC | Mr. B. Ogden | - MTC |
| Mr. A. Wittenberg | - MTC | Mr. G. Gray | - MTC |
| Mr. T. Zander | - MTC | Mr. H. Orlando | - MTC |
| Mr. R. Jefferies | - MTC | Mr. K. Ganesh | - MTC |
| Mr. R. Bigger | - MTC | Mr. P. Shaver | - MTC |
| Mr. H. McNeely | - MTC | Mr. J. Nuttall | - MTC |
| Mr. L. Dutchak | - MTC | Mr. I. Williams | - M. M. Dillon Ltd. |
| Mr. J. Desrocher | - MTC | Mr. J. Horton | - M. M. Dillon Ltd. |
| Mr. M. Chan | - MTC | | |

The meeting began with a brief introduction from Mr. Shaver.

This was followed by a summary of the progress of the study since the last Regional presentation in September 1985. Since that time the issue of the Pet Cemetery has been buried and Hamilton-Wentworth Region have passed a resolution in favour of Highway 6 (New). At the Public Information Centres, concerns were expressed over the originally proposed interchange at White Church Road interchange. (See below)

Mr. Shaver noted that full political support had been received from all Municipalities for the alignment.

Mr. Horton then presented the recommended alignment noting all controls/impacts.

Mr. Horton presented the previous technically recommended alignment at White Church Road and the now-proposed recommended alignment. The scheme now proposed satisfies the concerns of the Township of Glanbrook Council, Transport Canada, and was well received by the local residents at a recent Property Owners Meeting.

Mr. Riddell questioned the response from the Ministry of Agriculture and Food. Mr. Horton stated that meetings with the Ministry of Agriculture and Food have resulted with them agreeing with the evaluation of alternatives, including all factors and criteria used. However, no specific comment has been received on the removal of agricultural land. The Ministry of Agriculture and Food has agreed with the study approach employed to date.

Mr. Williams noted that early in the study it was decided that an 80m right-of-way, rather than the more normal 100m, would be used to minimize the requirements for agricultural land.

Mr. Riddell suggested that a meeting be held with the Ministry of Agriculture and Food prior to the next External Team Meeting.

Mr. McNeely felt that the loss of agricultural land would have to be defended given the recent comments from the Ministry of Agriculture and Food.

Mr. Wittenberg questioned the access and maintenance situation for the Book/Parkin Cemetery on Book Road. Mr. Nuttall explained that it is customary for the local municipality to maintain such cemeteries. The Town of Ancaster is currently unable to provide maintenance because there is no public access. It is the Study Team's proposal that, upon purchasing the lands for the interchange on Book Road, access to the cemetery would be provided. MTC would not undertake to maintain the cemetery.

Mr. Dutchak suggested that maintenance of the cemetery be discussed with Ancaster and that this matter be included in the upcoming Council resolution.

Mr. Wittenberg questioned the archaeological importance of the area. Mr. Nuttall replied that some preliminary work had been done but this had been hampered by poor weather conditions last November. Some sites of archaeological significance have been previously identified in the nearby areas associated with the airport expansion.

Mr. Horton briefly outlined the ongoing investigations consisting of structures, noise, archaeology, soils and drainage.

Mr. Williams then presented the staging alternatives for Highway 6 (New). He referred to the Tables presented in the handouts. The Study Team concurred that two lanes from Highway 403 to the Caledonia By-pass should be built as an initial stage.

Mr. Wittenberg noted that with a stage from Highway 403 to Butter Road, the first objective of Highway 6 (New), to serve the airport, would be met. He suggested a possible second stage to meet the objective of the increased use of the Caledonia By-pass, would be to construct northerly from the Caledonia By-pass to White Church Road.

Mr. Ogden noted that there had been concerns from the local residents of increased truck traffic on Regional roads. Therefore, if the alignment for Highway 6 (New) ended at White Church Road there is a possibility of increased truck traffic in the Town of Mount Hope and along White Church Road.

Mr. Wittenberg then suggested the second stage be to the Airport interchange, thus traffic would bypass the Town of Mount Hope. The third stage would be to fill in the section between Butter Road and the Airport interchange.

Mr. Wittenberg suggested that the structure at the Highway 6 connection south of White Church Road be built as part of the initial stage.

Mr. Williams noted that there had been some adverse accident experience with interchanges at 2-lane roadways and agreed to look at the design further.

Mr. Williams summarized the decision on staging as consisting of a 2-lane facility from Highway 403 to the Caledonia By-pass with the first stage likely being Highway 403 to Butter Road, the second stage from the Caledonia bypass to the Airport Road connection and a third stage from the Airport Road connection to Butter Road.

Timing of construction of the various stages will depend upon the availability of funds.

With respect to transfers, it was agreed that it would be unlikely that Hamilton-Wentworth would assume any of Highway 6 with the first stage to Butter Road. Once the second stage from the By-pass to the Airport were constructed, Hamilton-Wentworth and Haldimand-Norfolk would likely assume Highway 6 from Caledonia to Mount Hope. Once all of Highway 6 (New) were constructed, Hamilton-Wentworth would likely assume all of Highway 6 existing from the Regional limit to Hamilton.

The transfer of Highway 6 to the Regions will be addressed in the upcoming resolutions to Councils.

The further action proposed is that the Study Team will hold a third round of Public Information Centres in April 1986. Before these, there will be a round of Council presentations and resolutions from Council will be sought. In addition, an external team meeting will be held prior to the third series of Public Information Centres.

It was agreed that a presentation to the SPC would be held after the third round of Public Information Centres to present the public reaction.

The Environmental Assessment Document should be submitted some time in the Fall of 1986.

These Minutes of Meeting were prepared by Mr. J. P. Horton of M. M. Dillon Limited and any errors and/or omissions should be brought to his attention.

DISTRIBUTION

All present
F. Leech



MINUTES OF MEETING

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File: 9576-01/14

7 July 1986

On 25 June 1986 a meeting was held at the offices of M. M. Dillon Ltd. to discuss the Highway 6 (New) project.

Those in attendance were:

| | |
|----------------|----------------------------|
| • G. Burkhardt | - MTC, Structural Section |
| • M. Almer | - MTC, Structural Section |
| • R. Jeffries | - MTC, Structural Section |
| • P. Shaver | - MTC, Planning and Design |
| • B. Ogden | - MTC, Environmental Unit |
| • J. Nuttall | - MTC, Environmental Unit |
| • C. Doherty | - M. M. Dillon Ltd. |
| • J. Horton | - M. M. Dillon Ltd. |

Mr. Doherty briefly reviewed the drainage work undertaken by Dillon and MTC. The MTC used the rational method to determine flow of all the stream crossings. The Dillon analysis consisted of applying the water shed classification model to the major stream crossings and combining small crossings to form one larger crossing.

This analysis had resulted in some modifications to the profile, most notably in the vicinity of Glanaster Road where the profile was raised to accommodate the numerous small water crossings in the area.

The analysis has indicated two major crossings; one at the Seneca Creek south of Unity Road and the other at the Welland River north of Chippewa Road.

Mr. Burkhardt had the following comments and suggestions:

- 1) The work undertaken to date appeared to be suitable for the level of detail required for an Environmental Assessment Report.
- 2) No additional major work items were required other than documenting the work undertaken and reviewing these with the Conservation Authorities.
- 3) Due to the limited development in the area, the 50 year storm should be used for design purposes.

- 4) The Regional flood plain level should not be shown on the plans or profiles or used in discussions with the Conservation Authorities.
- 5) Overlapping catchment areas should be avoided between Conservation Authorities.
- 6) Attention to be paid to riparian rights where stream crossings are being designed. Previous MTC experiences indicated that as the ownership changes over the years, the new owner may not always agree with the drainage scheme proposed by the Ministry, and a redesign is required to accommodate the new owner.

It was agreed that Mr. Jeffries would proceed to set up meetings with the Conservation Authority to review the major crossings.

These Minutes of Meeting were prepared by Mr. J. P. Horton of M. M. Dillon Ltd. Any errors or omissions should be reported to him.

DISTRIBUTION

All present
F. Leech

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

MINUTES OF MEETING

File: 9576-14-3

6 August 1986

On 5 August 1986 a meeting was held at the Niagara Peninsula Conservation Authority in Allanburg, Ontario between 10:00 a.m. and 11:00 p.m.

Those in attendance were:

- * R. Jeffries - MTC Structural Division
- * P. Shaver - MTC Planning and Design
- * A. Willmot - NPCA
- * A. D'Amario - NPCA
- * C. Doherty - M.M. Dillon Ltd.

The purpose of the meeting was to review with the Conservation Authority the proposed Highway 6 (NEW) alignment, the conceptual drainage scheme, the watercourse crossing design criteria and to receive any comments they may have.

C. Doherty displayed an aerial photograph showing:

- * proposed alignment
- * watercourse location
- * upstream drainage boundaries
- * watercourses located in cut
- * proposed drainage scheme with associated crossings
- * location of high and low points in the proposed road profile
- * GRCA, NPCA and HRCA boundaries

A copy of a 1:10 000 scale aerial photograph with the above information, pertinent to the Authority, was left for future reference.

C. Doherty explained that the drainage scheme was conceptual and that a preliminary drainage study would be undertaken at a future date. The 50 year event would be used to design all diversion and road crossings as per M.T.C. Directive B-100. The 50 year event would be generated assuming future land use conditions. The conceptual drainage scheme, as shown on the aerial photograph:

- * does not increase the drainage area to the downstream culverts;
- * maintains riparian rights;
- * does not change the Conservation Authority boundaries.

P. Shaver explained that a definite time frame for construction has not been established. The Highway could be constructed in phases. As an example, the first phase could be from Highway 403 to Hamilton Airport. Other possibilities could be a two lane road and upgraded in the future as the need arose. Again no definite time frame and phasing has been established.

R. Jeffries asked whether the M.T.C. would be required to apply for a Fill Permit. A. D'Amario believed that by law, M.T.C. was not required to apply.

A. D'Amario commented that crossings with drainage areas above 130 ha should be designed to the 100 year event. P. Shaver added, crossings would be sized to the 50 year and that levels would be checked for the 100 year event. If flooding increased significantly the Authority would be contacted for review and comments.

A. Willmot raised concerns about sediment and erosion control. C. Doherty replied that measures, as outlined in M.T.C. sediment and erosion control manuals would be employed during construction. At the final design stage; drawings would be forwarded to the Authority for review and comments.

When asked about flooding complaints, A. Willmot responded the only one she knew of was Mrs. Love, P. Shaver acknowledged that M.T.C. and M.M.D. had discussed the issue with her.

A. D'Amario was concerned that flows in downstream watercourses could be seriously affected. C. Doherty added that only short reaches would be affected and not seriously. Drainage areas to downstream culverts would not change. The conceptual drainage scheme maintained riparian rights.

The minutes were prepared by C. Doherty of M.M. Dillon Ltd. Any errors or omissions should be reported to him immediately.

Distribution

| | |
|-------------|------------------------------|
| N.P.C.A. | A. Willmot, Resource Planner |
| | A. D'Amario, P.Eng. Planner |
| MTC | R. Jeffries, P.Eng. |
| | P. Shaver, P.Eng. |
| M.M. Dillon | C. Doherty, P.Eng. |

HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

MINUTES OF MEETING

File: 9576-14-3

6 August 1986

On 5 August 1986 a meeting was held at the Grand River Conservation Authority in Cambridge, Ontario between 2:00 p.m. and 2:45 p.m.

Those in attendance:

- R. Jeffries - MTC Structural Division
- P. Shaver - MTC Planning and Design
- L. Minshall - G.R.C.A.
- C. Doherty - M.M. Dillon Limited

The purpose of the meeting was to review with the Conservation Authority the proposed Highway 6 (New) alignment, the conceptual drainage scheme, the watercourse crossing design criteria and to receive any comments they may have.

C. Doherty displayed an aerial photograph showing:

- proposed alignment
- watercourse location
- upstream drainage boundaries
- watercourse located in cut
- proposed drainage scheme with associated crossings
- location of high and low points in the proposed profile
- GRCA, NPCA and HRCA boundaries

A copy of a 1:10 000 scale aerial photograph with the above information, pertinent to the Authority was left for future reference.

C. Doherty explained that the drainage scheme was conceptual and that a preliminary drainage study would be undertaken at a future date. The 50 year event would be used to design all diversion and road crossings as per M.T.C. Directive B-100. The 50 year event would be generated assuming future land use conditions. The conceptual drainage scheme, as shown on the aerial photograph;

- does not increase the drainage area to the downstream culverts;
- maintains riparian rights;
- does not change the Conservation Authority boundaries.

P. Shaver explained that a definite time frame for construction has not been established. The Highway could be constructed in phases. As an example, the first phase could be from Highway 403, to Hamilton Airport. Other possibilities would be a two lane road and upgraded in the future as the need arose. Again no definite time frame and phasing has been established.

R. Jeffries asked whether the M.T.C. would be required to apply for a Fill Permit. L. Marshall said she did not expect an application but wished to be informed.

L. Marshall queried the 50 year design criteria. P. Shaver replied that the 50 year would be used to size the crossing and it would be used to check the impact on the 100 year flood plain. If there was a significant increase we would inform the Authority. C. Doherty replied that within the Grand River Conservation Authority only two crossings had drainage areas above the 130 ha limit.

L. Minshall stated the only flooding complaints she has received were in the vicinity Unity Road and the Highway 6. P. Shaver responded that similar complaints were received at the public meetings. He went on to explain that measures to alleviate existing flooding were not within the scope of this study. Highway 6 (NEW) when constructed would not significantly increase flooding.

The minutes were prepared by C. Doherty of M.M. Dillon Ltd. Any errors or omissions should be reported to him immediately.

Distribution:

GRCA L. Minshall, P.Eng.
MTC R. Jefferies, P. Eng.
P. Shaver, P. Eng.

M.M. DILLON C. Doherty, P.Eng.

CD:mc



HIGHWAY 6 (NEW) - HAMILTON TO CALEDONIA

File No. 9576-01/14

WP 36-84-00

MINUTES OF MEETING

A meeting was held at the Ministry of Transportation and Communications offices at 5000 Yonge Street on Monday, 22 July 1985 to discuss the electrical requirements for the proposed interchange at Book Road.

Those in attendance were:

| | |
|-----------------|---------------------------|
| . Mr. W. Burkis | - MTC Electrical |
| . Mr. J. Jansen | - MTC Electrical |
| . Mr. P. Shaver | - MTC Planning and Design |
| . Mr. J. Horton | - Dillon |

Plans and profiles of a proposed interchange for Highway 6 (New) at Book Road were presented to the MTC Central Region, Electrical Section. The meeting was held to determine general lighting feasibility, taking into consideration the requirements of Transport Canada.

Two cases were examined:

1. Existing expansion and existing hydro tower locations.
2. Future expansion with no hydro.

Under the first case, the existing 8,000 ft. runway and the existing hydro towers would require that lighting be placed around the hydro towers. Due to the distance from the end of the runway, approximately 1,000 km, the Transport Canada glide path requirements should not affect the lighting heights and suitable spacing could be provided.

In the second case, the runway would be approximately 400 m from the Highway 6 (New). There would be no hydro towers. Based on an approximate Highway 6 (New) elevation of 230 m and an approximate elevation of the 10,000 ft. runway of 235.3 m, there would be approximately 12 m clearance to meet Transport Canada glide path requirements. Given that there were no hydro towers in the area at this time, this should be sufficient for 40 ft. lighting.

Not all Transport Canada requirements for guidance, lighting and glide path are known at this time. Once these requirements are known and the route and interchange configuration at Book Road is selected, plans will be re-circulated to the Electrical Office for their comments.

These minutes of meeting were prepared by Mr. J. Horton of M. M. Dillon Limited. Any errors and/or omissions should be reported to him.

Distribution

All present
B. Ogden
F. Leech

APPENDIX E

Correspondence



Air
Suite 300,
4900 Yonge Street,
Willowdale, Ontario
M2N 6A5

Your file Votre référence

Our file Notre référence

1590-1-120

October 15, 1985

Mr. P. Shaver, P.Eng.,
Project Manager
Planning & Design Office
Ministry of Transportation
& Communications
5000 Yonge Street
WILLOWDALE, Ontario
M2N 6E9

Dear Mr. Shaver:

Reference is made to Mr. Horton's letter of 7 June, 1985 to Mr. McLeod requesting comments on the general feasibility of 2 alternative alignments for Highway 6 (New) in the vicinity of Book Road.

Our review indicates that the alignments pass very close to aviation controls and that further detailed design work would have to pay close attention to the aviation requirements associated with Hamilton Airport and runway 12L. Each of the requirements has previously been discussed with you and Mr. Horton. The requirements are related to the existing Middle Marker (runway 12L) and to the height zoning, glide path area restrictions and approach lights for a future westward extension of runway 12L by 2000 feet (609 metres). These factors are outlined in more detail below.

(1) Middle Marker

With respect to the existing middle marker (runway 12L) which was previously thought to present the most critical aviation constraint, it has now been determined that the highway lanes or any object that could interfere with the signal of this navigational aid must be clear of the marker laterally by at least 61 metres. Both alternative alignments appear to meet this requirement.

- 2 -

The remaining aviation constraints which have to be considered in designing the new Highway 6 are most critical for the 609 metre westward extension of runway 12L. As you know, the draft Airport Master Plan for Hamilton Airport recommends the protection for extending runway 12L/30R from a length of 8,000 ft. to 10,000 ft. (3048 metres) to allow for the capability to meet future aviation needs. Two key alternatives are either the westward extension of runway 12L by 366 metres with a simultaneous eastward extension of 243 metres or the westward extension of runway 12L by the entire 609 metres. Designs for a future Highway 6 (New) should not conflict with the aviation requirements for the 609 metre westward extension of runway 12L, being the more critical of the two extension alternatives.

(2) Height Zoning

In planning the new Highway 6 it is necessary to ensure that any related structures, including lighting standards, signage and the vehicles which use the new highway and interchanges do not penetrate the height-zoned surface for a 609 metre westward extension of runway 12L, including the approach surface, transitional surfaces, and the outer surface.

These surfaces are defined for the existing runway 12L on pages 4 and 5 Zoning Regulations (Public Works Canada, January 1984) copies of which are attached (Attachments 1 and 2). The approach and transitional surfaces should be shifted 609 metres westward along the runway centerline and dropped vertically by one metre to determine the height zoning for the extended runway. From the concept drawings SK7 and SK8 you have supplied and the elevations given, there appears to be clearance on the new highway system between the top of a 4.5 metre high vehicle and the zoned surfaces for the extended runway. The most critical area occurs along the edge formed by the northernmost transitional surface and the approach surface where this edge crosses the New Highway 6 alignments. The highway lighting standards in particular and any signage will have to be designed with clearance from the zoning surfaces.

(3) Glide Path Restricted Area

The Glide Path Restricted Area for the extended runway 12L is shown on the attached Map 3 (Attachment 3). Please note that your drawings SK7 and SK8 have shown the Glide Path

.....3

Restricted Area incorrectly. As indicated to you, objects must not be allowed in this area that have an elevation higher than 234 m, which is the elevation of the end of the extended runway 12L. This is to protect against signal reflections for the Instrument Landing System. The preliminary designs given appear to have some clearance problems in the section of the Glide Path Restricted Area which is north of the extended centreline of runway 12L. Any ongoing developments of these alignments would require further discussions with Transport Canada in order to resolve these clearance problems.

(4) Approach Lights

The approach lights for the extended runway 12L number 30 in total and are spaced 30 metres apart with the first being located 30 metres from the end of the runway pavement. In order to minimize the impact of the proposed new Highway 6, it may be necessary to laterally adjust the alignment of the Highway.

Access Requirements for Hamilton Airport

You earlier requested an indication of Transport Canada's access requirements for the airport.

As you know we are now in the process of completing an expansion of the existing airport terminal area adjacent to Airport Road and improvements to the off-airport road system are needed to fully realize the development potential for the airport. A connection of the expanded airport development on Airport Road to the New Highway 6 is highly desirable and I understand there are detailed discussions presently underway regarding an interchange location close to the existing terminal area.

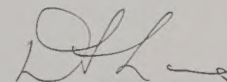
Long-term plans for the site indicate that future demand will necessitate the relocation of all passenger processing facilities and major air cargo operations to the north field area, south of Dickenson Road. The actual time of relocation has been estimated to be late 1990 to early 2000 depending upon how quickly passenger growth materializes. Any plans for the new Highway should facilitate access to the north field area, while continuing to maintain the access to the south field area. The south field area at this later time would be dedicated to general aviation and commercial/industrial operations.

With respect to the choice of alignments for the new Highway 6, Transport Canada favours alignment A (subject, of course, to the observance of civil aviation restrictions) from the viewpoint of having potential to provide the most convenient access to present and future development of Hamilton Airport.

I understand that at this time, the MTC is focussing on a likely alignment which is further west than proposals we have commented on in this letter. As my staff have discussed with you we would be pleased to review this alignment from an aviation and airport operation viewpoint in the near future.

I trust the information contained in this letter will assist you in selecting a route for the New Highway 6. We appreciate the opportunity of working with you on this important project and will be pleased to provide whatever further assistance you may require.

Yours sincerely,



D.A. Lane
Ontario Regional Administrator
Canadian Air Transportation Administration

Attachments

